

JPRS-TEN-91-006  
21 MARCH 1991



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# ***JPRS Report***

# **Environmental Issues**

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# Environmental Issues

JPRS-TEN-91-006

## CONTENTS

21 March 1991

### INTERNATIONAL

Third World Situation's Effect on Environment [Zurich DIE WELTWOCHE 10 Jan] .....	1
Industrial Toxic Waste Said To Threaten Third World [Beijing Radio 23 Feb] .....	2
Brazil's Collor Visits Antarctic; Stresses Treaty Provisions [Brasilia Radio 20 Feb] .....	3
Pakistani Research Station Set Up in Eastern Antarctica [AFP 28 Feb] .....	4
Japanese Committee Recommends Earth Environment Map Project [Tokyo KYODO 20 Feb] .....	4
Japanese Fishermen To Help Monitor Ocean Environment [Tokyo KYODO 18 Feb] .....	4
South African Environment Minister Urges Ban on Gill Nets [Johannesburg Radio 18 Feb] .....	4
South Africa Detains Taiwanese Fishing Vessel With 'Illegal' Nets [Johannesburg SAPA 19 Feb] ..	5
German Environment Minister on Agreement With Bulgaria [Sofia BTA 13 Feb] .....	5
CSFR Minister Expects Environment Convention To Be Signed Soon [Prague CTK 26 Feb] .....	5

### AFRICA

#### REGIONAL AFFAIRS

South African Government Proposes African Committee on Waste Dumping [Johannesburg Radio 15 Feb] .....	6
Conference on Tropical Rain Forests Opens in Accra [Dakar PANA 25 Feb] .....	6

#### ANGOLA

Caxito Reforestation Project Outlined [JORNAL DE ANGOLA 13 Jan] .....	6
---	---

#### BOTSWANA

Government Abandons Okavango Development Project [Johannesburg International 13 Feb] .....	8
--	---

#### GABON

Timber Industry in 'Serious Crisis' [Dakar PANA 18 Feb] .....	8
---	---

#### KENYA

Finland Provides Forestry Grant [Nairobi Radio 23 Feb] .....	8
--	---

#### NIGERIA

Government Urged To Tackle Ecological Problems [O. Ogunyemi; THE GUARDIAN 23 Dec] .....	8
---	---

#### SOUTH AFRICA

Government Suspends Commercial Seal Culling [Johannesburg Radio 14 Feb] .....	9
Environmental Advantages of Nuclear Power Noted [FINANCIAL MAIL 18 Jan] .....	9

### CANADA

Environmentalists Lose Round in Cape Breton Power Project Fight [K. Cox; THE GLOBE AND MAIL 19 Jan] .....	11
British Columbia Pulp Mill Fined for Toxic Spill [G. Bohn; THE SUN 11 Jan] .....	11

## CHINA

Government To Spend Billions for Pollution Control Measures [CHINA DAILY (BUSINESS WEEKLY SUPPLEMENT) 24 Feb] .....	13
Government To Disburse Funds for Environmental Protection [Beijing International 24 Feb] .....	13
State Issues Provisions on PCB Pollution Control [XINHUA 1 Mar] .....	13
Li Peng Submits Draft Law on Preventing Soil Erosion [XINHUA 25 Feb] .....	14
New Technique Reduces Application of Pesticides [XINHUA 20 Feb] .....	14
Environmental Bureau Founds Literature Society [XINHUA 22 Feb] .....	15
Environmental Protection Efforts in Tibet [XINHUA 17 Feb] .....	15
Plan To Boost Weather Research Forecasting Announced [CHINA DAILY 27 Feb] .....	15
Rising of Bohai Sea Poses Environmental Problems [XINHUA 20 Feb] .....	16

## EAST ASIA

### REGIONAL AFFAIRS

Taiwanese Driftnet Fleet Stays Away From South Pacific [AFP 14 Feb] .....	17
Asian Development Bank Provides \$815,000 to Indonesia From Japan Fund [Tokyo KYODO 14 Feb] .....	17

### BURMA

Government Signals Change in Logging Policy for Thai Firms [Bangkok THE NATION 4 Mar] ..	17
Reputed Drug Trafficker 'Forced' To Join Teak Logging Deal [THE NATION 16 Feb] .....	18

### SOUTH KOREA

Envoy Says Nation Must Increase Environmental Concern [YONHAP 28 Feb] .....	19
---	----

### PHILIPPINES

Government Says U.S. Should Pay for Damaged Baselands [BUSINESS WORLD 26 Feb] .....	20
---	----

### TAIWAN

Formosa Plastics Not To Construct Naphtha Cracker in Yilan [CNA 3 Mar] .....	20
--	----

## EAST EUROPE

### BULGARIA

Lack of Radiation Protection System Alleged [NARODNA ARMIYA 19 Feb] .....	21
Kozloduy Nuclear Plant Lacks Good Emergency Plans [DEMOKRATSIYA 14 Feb] .....	21
Construction of Belene Nuclear Plant Suspended [BTA 22 Feb] .....	22
Radiation Problems of Redki Metali Company .....	22
KNSB Investigates [DUMA 24 Dec] .....	22
Mortality Rates [OTECHESTVEN VESTNIK 4 Jan] .....	22

### CZECHOSLOVAKIA

Czech Prime Minister Notes Environmental Concerns [Prague Radio 26 Feb] .....	23
Radioactive Waste Dump Being Prepared in Mochovce [PRAVDA 28 Feb] .....	23

### POLAND

Japan To Help Nation Stem Fossil Fuel Pollution [Tokyo KYODO 25 Feb] .....	23
--	----

## LATIN AMERICA

### REGIONAL AFFAIRS

Uruguayan Official Cites Brazilian Power Plant as Pollution Source	[Madrid EFE 20 Feb]	25
--	---------------------	----

### BRAZIL

President Collor Launches Forestry Program	[Brasilia Radio 14 Feb]	25
Fire Destroying Important Ecological Reserve	[Brasilia Radio 26 Feb]	25

## NEAR EAST/SOUTH ASIA

### REGIONAL AFFAIRS

Oil Slick Heads South, Saudi Cleanup Measures Prepared	[Riyadh SPA 13 Feb]	26
Saudi Official Reports on Action To Tackle Oil Spill	[Riyadh SPA 19 Feb]	26
Soviet Experts Say Remedy Could Clear Gulf Slick in 'Two to Three Months'	[Moscow TV 19 Feb]	26
Saudi Operations To Combat Gulf Oil Slick Continue	[Riyadh SPA 27 Feb]	27
USSR Ready To Help Remove Gulf Oil Slick	[Moscow TASS 28 Feb]	27
Kuwaiti Oil Well Fires Expected To Destroy Forests	[Tokyo KYODO 28 Feb]	28
Oil, Smoke, Greasy Rain Pollute Iranian Sea, Air	[Tehran IRNA 19 Feb]	28
Black Rain in Iran Blamed on Oil Well Fires	[Tehran KAYHAN INTERNATIONAL 24 Jan]	28
Thick, Black Smoke Covers Ilam, Khuzestan Provinces in Iran	[Tehran Radio 25 Feb]	28
'Black Rain' Falls in Iran's Bushehr Province, Other Areas	[Tehran IRNA 27 Feb]	28
Black Rain Causes Panic in Turkey	[Ankara ANATOLIA 27 Feb]	29
Soviet Roundtable on Gulf War Ecology Damage	[Moscow PRAVDA 11 Feb]	29

### INDIA

Parliament Panel To Study Pollution Control	[THE TIMES OF INDIA 18 Jan]	30
---	-----------------------------	----

### IRAQ

Soviet Official Assesses Iraq's Potential Radiation Damage	[Moscow RABOCHAYA TRIBUNA 16 Feb]	31
--	-----------------------------------	----

### ISRAEL

Upgraded Oversight of Plant Safety, Pollution Health Dangers Urged	[HA'ARETZ 17 Dec]	32
--	-------------------	----

## SOVIET UNION

First Edition of Ecological Weekly Published	[TASS 25 Feb]	37
More on New Ecological Newspaper	[Moscow Radio 2 Mar]	37
Commission Report Analyzes Cause of Chernobyl Disaster	[TASS 19 Feb]	37
Russian Parliament Concludes Chernobyl Problems Still Unresolved	[TASS 20 Feb]	37
Belorussian Supreme Soviet Adopts Protection for Chernobyl Victims	[Moscow Radio 25 Feb]	38
More on New Belorussian Chernobyl Compensation Law	[TASS 25 Feb]	38
Background Radiation Statistics for Ukraine Updated	[KRASNAYA ZVEZDA 28 Feb]	38
KGB Staffers Review Need for Nuclear Power Plant Security	[V.F. Nosko and A.P. Ostapenko; PRAVDA UKRAINY 4 Dec]	39
Novovoronezh Nuclear Station Restores Reactor Vessel	[Moscow TV 19 Feb]	40
Prospects for Cleaner Power Generation Program Explored	[A. Illarionov; IZVESTIYA 27 Nov]	41
Careless Handling of Radioactive Sources, Poor Monitoring Examined	[V. Davydov; TRUD 11 Jan]	42
Effort To Eliminate Moscow's Radioactive Hotspots Examined	[N. Kozlova; RABOCHAYA TRIBUNA 30 Jan]	44
Narva Official Criticizes Perceived Environmental Protection Weaknesses	[Yu. Mazanov; SOVETSKAYA ESTONIYA 1 Dec]	47



Estonian Environment Minister Comments on Republic Concerns [T. Frey; SOVETSKAYA ESTONIYA 2 Dec]	48
Odessa Holds Referendum on Closure of Port Chemical Works	50
Referendum Results [D. Romanov; TRUD 20 Dec]	50
Political Aspects Examined [V. Kreshchuk; RABOCHAYA GAZETA 22 Dec]	50
Fears About Radiation Levels in Sochi 'Seem Unfounded' [Moscow TV 22 Feb]	51
'Ecologically Harmful' Nairit Plant To Reopen in Yerevan [Moscow TV 12 Feb]	52
Army Unit Fuel Leak Contaminates Arctic Settlement Water Supply [Moscow Radio 17 Feb]	52
More on Arctic Lake Fuel Spill [Moscow Radio 19 Feb]	53
Reported Dioxin Pollution Levels in Ufa Causing 'Shock' [KOMSOMOLSKAYA PRAVDA 21 Feb]	53
Chelyabinsk Marchers Protest Nuclear Power Plant [TASS 24 Feb]	53
Threat of 'Ecological Disaster' in Northern Tyumen Oblast [IZVESTIYA 12 Feb]	54
USSR Supreme Soviet Adopts Decree on Aral Sea [TASS 1 Mar]	54
Kamchatka Adds Environmental Question to Referendum [TASS 25 Feb]	54
Chukotka Radar Stations Said To Pose Health Hazard [Moscow TV 14 Feb]	54
Global Ecological Strategy Seen Evolving From Historical Lessons [V.A. Los; OBSHCHESTVENNYE NAUKI No 6, Nov-Dec]	55

## WEST EUROPE

### REGIONAL AFFAIRS

Baltic Sea Facing Ecological Collapse [Berlin JUNGE WELT 10 Jan]	62
CSFR, German Environmentalists Discuss Future Cooperation [CTK 19 Feb]	62
German-Polish Environmental Council To Be Set Up [Hamburg DPA 4 Mar]	63
Poland, Norway Sign Environmental Cooperation Agreement [Warsaw PAP 21 Feb]	63
Sunken Tanker Contaminates Adriatic [Zagreb VJESNIK 14 Feb]	63

### FRANCE

Environmental Research Funding Levels Low [LE MONDE 24 Jan]	64
Poll Shows Self-Criticism for Waste [LIBERATION 7 Feb]	65
Measures Approved for Fighting Forest Fires [LE MONDE 22 Jan]	65
Peugeot Introduces Electric Car [V. Maurus; LE MONDE 5 Dec]	66
'Unique' Method of Aerosol Destruction [LIBERATION 18 Jan]	67

### GERMANY

Aerospace Institute To Develop Environmental Image Database [BMFT JOURNAL Nov]	68
--	----

### IRELAND

Government Orders Ozone Damage Study [IRISH INDEPENDENT 11 Jan]	68
---	----

### ITALY

Company Develops Robot for Aluminum Foundries [ITALIA OGGI 19 Dec]	68
--	----

### UNITED KINGDOM

Acid Rain Legislation To Be Challenged [THE DAILY TELEGRAPH 21 Jan]	69
---	----

### Third World Situation's Effect on Environment

91WN0238A Zurich DIE WELTWOCHE in German  
10 Jan 90 p 23

[Article by Paul Imhof: "What Happens if One Indian in Sixty Has a Refrigerator?"]

[Text]

#### An Example

There are 900 million people in India and not even 5 million refrigerators. In the year 2000 it will be up to 13 million refrigerators. This small jump in affluence will further heat up the greenhouse effect: India cannot afford to produce refrigerators that are compatible with the environment.

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Almost 900 million people live in India. About one quarter, or 200 million, belong to India's middle class. That is probably about 40 million families. The first major consumer item that middle class families want to acquire is a refrigerator.

What does the refrigerator in an Indian home have to do with global environmental problems? A great deal, in fact. No other environmental problem, in the view of the Washington Worldwatch Institute (report, "On The World Situation 1990-91"), is coming to such a dramatic head as the change in the global climate. The average of temperatures around the world today is about 0.6 degrees Celsius [C] higher than 100 years ago. By the middle of the next century, based on computer models, a rise of between 2.5 and 5.5 degrees C can be expected. "The difference between the warming of the last 100 years and the figures we can expect in the decades ahead is the equivalent of that between a mild April day and a hot day in mid summer." The Institute is calling for "a comprehensive, detailed and binding treaty on protecting the climate." Such a treaty is expected to be signed in June 1992 at the UN conference on the environment in Rio de Janeiro.

Chlorofluorocarbons (CFC's) bear some of the responsibility for the ecological disaster. The worldwide use of CFC's in the 1980's was divided into propellant gases (25 percent), rigid foam insulation (19 percent), solvents (19 percent), air conditioning units (12 percent), refrigerants (8 percent), soft foam insulation (7 percent) and other (10 percent).

Industrialized nations consume about 70 percent of the CFC's produced worldwide (the United States alone about 29 percent); the USSR and the former East bloc nations consume about 14 percent, and the remaining 16 percent is distributed among the rest of the world. China and India, the two most populous countries in the world, consume only 2 percent at the present time.

With the signing of the Montreal Treaty of 1987, 66 nations have so far bound themselves to restrict the use of harmful CFC's and halogens (fire extinguishing materials).

In order to accommodate the developing nations, they were granted a 10-year longer period than was given the industrialized nations for thinning out CFC's. The Montreal Treaty gives the developing nations the opportunity to balance their need to catch up, with respect to the industrialized nations. They are to be allowed to use all harmful substances until the year 2005 and then reduce them to 80 percent. The biggest jump is to take place in 2007: Then the use of ozone-damaging materials is to be reduced to 15 percent. By 2020 they are supposed to disappear from the market completely and be replaced by other substances. In order to assist the developing nations in this process of replacement, an international fund is to be established and negotiations are to begin on technology transfer.

India and the People's Republic of China are potentially among the most dangerous environmental sinners. Of course they are not yet there due to the enormous lag in their development. The big push in automobiles, heating, air conditioners, plastic products, household objects, and other consumer goods still lies ahead for them. The developing countries feel themselves being drawn into a morass of environmental problems that they did not create. In the opinion of many third-world politicians the responsibility for the environmental disaster belongs with the rich industrial nations alone. Many regard the warnings from the West as an injustice and as a renewed attempt to repress the developing countries.

India, which frequently and quite quickly scents neocolonial digressions behind the activity of the industrialized nations, wanted to be absolutely certain and commissioned a study. Using the example of the common consumer item, the refrigerator, the study aimed to find out how much the process of replacing the harmful CFC's would cost. The Indian government commissioned the London consulting company, Touche Ross, to conduct the study.

At the present time there are just under 5 million refrigerators in use in India. By the year 2000 between 8 and 9 million will be added each year. In a refrigerator there are 30 to 50 grams of CFC's as refrigerant and about five times that amount of CFC's in the form of expanders in the insulating foam in the walls. As long as the materials are doing their job inside an intact refrigerator, they do not cause any damage. The problem begins with leaks, repairs and disposal, when the CFC's escape into the air as the result of evaporation or combustion. Disposal in India does not mean a trip to the landfill right away, but rather, initially, to the second-hand dealer: While the average useful life of a refrigerator is barely 12 years in industrialized countries, in a country like India the item continues to be traded until it

has literally dissolved into rust—the refrigerator could be in operation for up to 35 years.

Nothing can be changed in this sales path from first to fourth hand—which is good, because India does not have to become another throw-away society. But the prospects that with the years tons of chloridated hydrocarbons will be discharged into the subcontinent's atmosphere are as certain as they are threatening. Ultraviolet [UV] rays, which penetrate the weakened ozone layer with increased strength, promote not only skin cancer, but also cataracts. They are harmful to agriculture; soy plants above all react very sensitively to UV radiation. Even fish stocks in the oceans will change (just how is uncertain) under the effect of the increased UV radiation.

These are problematic prospects for a country like India, where the same medical care does not exist as in the West and where, as a result, not as many patients can be operated on for cataracts. The result is blindness. Fish stocks are equally vital, because they are the most important source of protein for the majority of people.

At the end of the chain that leads beyond the target year of 2010, substitute refrigerants of current composition will in theory no longer exist. So it would be a rational step and one of long-term economy in two ways if India would mandate the use of soft, ozone-saving refrigerants as soon as possible—even if the application of new regulations to cover every instance can hardly be enforced by the police but by means of tax policy. The introduction of environmentally friendly substances will spur a considerable jump in costs.

R. Fraser Morrison, who conducted the study, considers two possibilities: India could resort to the "Stone Age method" and use ammonia as a refrigerant, or gradually introduce propane gas, as was done earlier. Against this is the danger of explosion from both substances, which is a contradiction to the extent that cooking in many developing countries is already carried out using propane gas. Fraser Morrison: "Western safety standards for developing countries must be questioned. In the West human lives are not of paramount concern where the danger of explosion is involved, but rather insurance amounts."

That leaves the new, ozone-saving refrigerants. In India five factories are currently working at overcapacity with a total of 5,000 tons of CFC's. So, according to Fraser Morrison, a "major price war" is under way, which is making it more difficult to introduce suitable, but more expensive refrigerants. An additional obstacle to the possible early conversion to gentler refrigerants—which costs more initially, but is ultimately less expensive—lies in India's maxim in economic policy of being self-sufficient in every respect. In order to manufacture the replacement materials, the Indian factories require the proper recipes: India insists on technology transfer. Only the best that the West has to offer is good enough—and if possible at no charge.

And this goes against the grain for Western enterprises, because they want to sell and not give away. They will continue to sit on their patents until the price is right. It is an easy matter for the few multinational concerns to come to a mutual understanding and to ensure market shares for themselves.

The biggest problem according to Fraser Morrison lies in convincing the Indians that they have to change their refrigerants now and not in a few years time. The Indians are afraid that with the increasing cost of refrigerators the cost tie to a single product will absorb too much purchasing power from other market sectors and ultimately hurt the economy. The export trade will be further hampered as a result of this increased cost. The intent is neither to discourage Indian consumers nor to handicap an economy on the upswing.

The prospect of one's breath being choked off sooner or later with this short-sighted attitude is pushed out of the conscious mind both in the West and in India. The concentration of buying power on a single product will take place just the same, because the new refrigerants will have to be introduced at some point regardless.

If India were to promote the ozone-saving refrigerants as quickly as possible, the additional costs would probably be a minimum of \$200 up to a maximum of \$500. This amount would then (theoretically) be paid from the funds from the Montreal Treaty. In three years the fund is supposed to contain \$160 million. If India and the People's Republic of China do sign the Treaty, then the funds are to be increased by \$80 million. Which means that India and China can each count on \$40 million. Umpteen million less than India, which is in debt to the amount of \$63 billion, needs—and this is calculated from the simple example of chlorofluorocarbons in the form of refrigerators, and a modest one in proportion to the total impending environmental catastrophe.

### **Industrial Toxic Waste Said To Threaten Third World**

*OW2402183291 Beijing Domestic Service in Mandarin  
0530 GMT 23 Feb 91*

[Text] Dear listeners, as we all know, industrial waste pollution of the environment is a problem in modern society. Because it is very expensive to dispose of toxic industrial waste, some Western countries try every means of dumping their waste in Third World countries, thus inflicting great damage on the people. We discuss this problem in the following article.

Worldwide creation of toxic waste is increasing at a rate of 500 million tonnes per year. About 90 percent of the world's toxic waste comes from Western industrialized countries. Disposing of toxic waste is very expensive in the West. At least \$30 million is needed to build a medium-sized waste disposal plant in the United States. It costs \$1,000 to treat one tonne of waste; in West Europe, treating the same tonne would cost \$2,000. Therefore, American and European countries have a

tendency to dump toxic waste outside their territories. As a result, some countries in the Third World are victimized.

Western countries, in their attempts to ship toxic waste to other countries, have adopted morally reprehensible methods. They usually don a cloak of legality by signing secret agreements with other countries in their efforts to smuggle out their toxic waste. One of their best tricks is bribing officials in developing countries with large sums of money. Some Third World countries, seeking benefits, accept these toxic waste.

It is estimated that at least 11 developing countries have accepted waste from the United States and Europe since 1986. As of 1988, toxic waste imported by developing countries amounts to 6 million tonnes. At present, every five minutes a ship loaded with toxic waste crosses borders.

The consequences of importing toxic waste are very severe. Toxic waste will poison living things like trees. In addition, the poison will spread gradually to populated areas, causing cancer and other diseases. Toxic waste pollutes the air, the environment, and underground water.

For example, Italy stored several thousand barrels of waste in Nigeria at a cost of \$100 a barrel per month. Soon, chemical compounds in the barrels began to leak. Stevedores were burned by the chemicals. Some of them were even paralyzed. Some lost their lives because they ate polluted rice by mistake.

Recently, more and more Third World countries have recognized the immensity of this danger. They began to take measures against the dumping of toxic waste by industrialized countries. They urged the formulation of laws governing the transportation of toxic waste across borders. The Organization of African Unity adopted a resolution condemning industrialized countries for dumping toxic waste by using money to seduce poor African countries. The organization established a waste-monitoring office and banned dumping in African waters and lands. Some Third World countries have established severe punishment for businessmen and government officials involved in the smuggling of waste.

International waste problems are a grave reality. It is estimated that as of the beginning of the next century accumulated nuclear waste in the world will reach 125,000 tonnes, which will cause endless damage to living things all over the world. World public opinion urges industrialized countries to store or recycle toxic waste on their own. The United Nations Environment Program is also formulating relevant judicial measures.

### **Brazil's Collor Visits Antarctic; Stresses Treaty Provisions**

*PY2102112891 Brasilia Domestic Service in Portuguese  
2200 GMT 20 Feb 91*

[Text] President Fernando Collor de Mello has stated that his visit to the Antarctic confirms the full integration of his government with the objectives shared by the other signatories of the Antarctic Treaty of almost 30 years ago.

[Begin Collor recording] Like those countries, Brazil has assumed the commitment of guaranteeing this immense continent a future dedicated to peace and science, free of any military activity and of any risk of nuclear contamination. [end recording]

President Collor stated that the objectives of the treaty are being fulfilled and that the signatories are now concerned over preserving the Antarctic, safeguarding its original characteristics from the effects of an increasing human presence in the region.

[Begin Collor recording] The gradual process of learning about this territory, the scope of which awakens the respect of its scholars, makes us understand the importance of its contribution to our survival on this planet. Thanks to the freedom of scientific research provided for by the treaty, the Antarctic is the object of special interest into research into life, the earth, and the atmosphere.

We thus have better knowledge of this continent which has a fundamental influence on the climatic conditions of the world and which encompasses almost half of the living resources of the oceans. [end recording]

President Collor reaffirmed Brazil's commitment to the objectives of the Antarctic Treaty, in which it has been involved since 1983.

[Begin Collor recording] We are continuing a high level of scientific activity and I am pleased to emphasize the research we have conducted on the ozone layer and our biological research on krill. The devotion of some civilian sectors of Brazilian society, where we can see the outstanding presence of the national scientific community and of several official institutions, has resulted in effective cooperation and the full development of our Antarctic program. [end recording]

Collor noted that the presence of the Brazilian base shows our involvement in the Antarctic continent.

[Begin Collor recording] Protected by a small group of men of the Brazilian Navy and housing representatives of the scientific community in both summer and winter, the Commander Ferraz Base does not surprise those who, like myself, have heard references made to this base, notably by international ecological organizations. [end recording]



President Collor added that the compliance with the objectives of the Antarctic Treaty by those who implement the Brazilian program, reflects the efforts by his government to guarantee for future generations this exemplarily preserved microcosm of nature.

#### **Pakistani Research Station Set Up in Eastern Antarctica**

*BK0103033491 Hong Kong AFP in English 2210 GMT 28 Feb 91*

[Text] Karachi, Feb 28 (AFP)—Pakistan has set up a research station in eastern Antarctica, including an automatic unmanned weather station, an expedition member said Thursday.

The Jinnah Station, named after Pakistan's founder Muhammed Ali Jinnah, was established January 15 by a 40-member scientific expedition on its first expedition to the Antarctic, said M.A. Rabbani.

The 74-day trip was the first Moslem expedition to Antarctica, he said.

The team conducted experiments in glaciology, ice movement, solar radiation and environmental studies, said Mr. Rabbani, who is also chief scientist at the Institute of Oceanography.

Pakistani scientists also drilled through the ice to collect marine samples, he said, adding that they planned to send another expedition next year.

#### **Japanese Committee Recommends Earth Environment Map Project**

*OW2002120391 Tokyo KYODO in English 1048 GMT 20 Feb 91*

[Text] Tokyo, Feb. 20 KYODO—The Geographical Survey Institute of the [Japanese] Construction Ministry said Wednesday it would cost about 2.5 trillion yen to compile an environmental map of the earth and data essential to help solve the global deterioration of the environment.

An advisory committee to the institute recommended that it make a detailed environmental map featuring the ecology of plants, the utilization of land, water flow, and other environmental elements.

The committee has also recommended that the institute extend assistance to developing countries to set up universities to teach students to make parts of the global environmental map.

The Printing Bureau of the Finance Ministry in mid-February published a report by the Advisory Committee on Land and Ecology, including the map project.

#### **Japanese Fishermen To Help Monitor Ocean Environment**

*OW1802090691 Tokyo KYODO in English 0844 GMT 18 Feb 91*

[Text] Tokyo, Feb. 18 KYODO—The Fisheries Agency plans to have Japanese fishermen operating on over 4,000 vessels around the world take part in monitoring the ocean environment, officials at the agency said Monday.

The government agency has launched a study group to promote the plan, they said.

Under the plan, deep-sea fishing vessels are equipped with measuring instruments for pollutants, and facilities to gather information on marine life in various parts of the world.

The agency also plans to draw up a map of contaminated areas and eventually produce a systematic study of global ecology.

The information will be collected for distribution from the fiscal 1992 year, beginning April 1, 1992, according to the officials.

They say the main aim of the plan is to contribute to preventing the destruction of the environment, but they also hope it will help improve the image of the Japanese fishery industry, which is often criticized by environmentalists over its practice of hunting dolphins and whales.

Japan is allowed to continue whaling in the Antarctic Ocean, which was excluded from a ban under an agreement at the International Whaling Commission in 1987, provided that it is for purposes of scientific study.

The officials said they hope to examine the oil spill in the Persian Gulf and its potential effect on the ecology in the Indian Ocean.

#### **South African Environment Minister Urges Ban on Gill Nets**

*MB1802171091 Johannesburg Domestic Service in English 1600 GMT 18 Feb 91*

[Text] South Africa has called for international cooperation to prevent the use of gill fishing nets.

The minister of environmental affairs, Mr. Louis Pienaar, said after talks with concerned groups in Cape Town that he would like to see an international convention prohibiting gill net fishing throughout the world. He said the United Nations would be approached in this regard.

A treaty would also be sought with Australia, New Zealand, Argentina, and other countries to ban this form of fishing in the southern Atlantic.

Mr. Pienaar said the government was also looking into possible legislation against vessels carrying tackle which could be used for gill netting.

A forum has been established between the government and concerned groups to promote the protection of the marine environment.

### **South Africa Detains Taiwanese Fishing Vessel With 'Illegal' Nets**

*MB1902194591 Johannesburg SAPA in English  
1915 GMT 19 Feb 91*

[Text] Mossel Bay Feb 19 SAPA—A fishing trawler from the Republic of China is being escorted to Mossel Bay after allegedly using illegal nets along the Cape south coast, SABC's [South African Broadcasting Corporation] radio news reported on Tuesday [19 February].

The Hwa Ren No 16 is expected to reach Mossel Bay on Tuesday afternoon.

The vessel is being escorted by a patrol boat of the Department of Nature Conservation, the Pelagus.

A spokesman for the department, Mr. Johan van Zyl, said an investigating officer was on board the trawler. The investigation would be continued in Mossel Bay, he said.

### **German Environment Minister on Agreement With Bulgaria**

*AU1302214391 Sofia BTA in English 2046 GMT  
13 Feb 91*

["Klaus Toepfer: Towards an All-European Environmental Strategy"—BTA headline]

[Text] Sofia, February 13 (BTA)—Prof. Dr. Klaus Toepfer, the German minister for the environment, conservation and reactor safety, sees the April 14, 1989, German-Bulgarian agreement on the environment as a basis for a fruitful and steady cooperation. The bilateral priorities are control of air and water pollution, waste treatment and elimination of hazards. The two countries should share experience and information on the logistical and economic aspect of their environmental policy, Dr. Klaus Toepfer explains in an interview taken by journalist Tsocho Kumanov.

Dr. Toepfer believes that environmental protection in countries like Bulgaria can benefit both from an extensive exchange of information and experience and from projects like the installation of an air-pollution monitoring network under the Phare Programme.

"Alongside this assistance, intended to give you a chance to help yourselves, I think it is essential to realize that environmental problems in central and Eastern Europe have been caused above all by the wrong economic policy during the last few decades," the federal minister said. He believes that an environment-friendly economic

development will yield better results in the long run than efforts to offset environmental degradation.

"We should take the opportunities opening up with the historic changes in Europe to promote European and global environmental cooperation," the minister said. He pointed to a number of initiatives that marked the promising beginnings of East-West ecological cooperation such as the conference of the foreign ministers of the Common Market and the Council for Mutual Economic Assistance states in Dublin in June 1990. "The focus of the Conference on Security and Cooperation in Europe, the classical forum of East-West cooperation, has shifted to the search of joint solutions to Europe's common environmental problems," Dr. Toepfer said.

Dr. Toepfer pointed out that the numerous national, bilateral and multilateral initiatives for protecting the common European environment should be coordinated and joint strategies should be worked out. "The Federal Ministry of the Environment has asked a renowned economics research institute in Germany to develop a European strategy for a durable improvement of the central and East European environment," the minister said.

Dr. Klaus Toepfer emphasized that environment policy can only work if based on a long-term strategy.

### **CSFR Minister Expects Environment Convention To Be Signed Soon**

*AU2802151391 Prague CTK in English 2049 GMT  
26 Feb 91*

[Text] Prague Feb 26 (CTK)—Czechoslovak Minister-Chairman of the Federal Committee for the Environment Josef Vavrousek said here today he believed that Czechoslovakia would soon sign the Convention on the Evaluation of Influence of Various Activities on the Environment.

The convention must be discussed by the Czech, Slovak, and Federal Governments. It will also be necessary to explain the interpretation of the document in relation to Czechoslovakia's neighbor Austria.

This document, which provides for settling problems of the environment in the context of the transfer of emissions across borders of states, was signed in Helsinki today by 25 European States, Vavrousek told newsmen on arrival from talks of senior government advisers for the environment and water of the UN European Economic Commission.

Vavrousek said that Czechoslovakia and Norway signed in Helsinki an agreement on cooperation in environmental protection. Signing of similar agreements with the other Scandinavian countries is under way. Czechoslovakia agreed to realize five regional projects with Germany and Poland which concern the basic ecological problems in Central Europe.

## REGIONAL AFFAIRS

**South African Government Proposes African Committee on Waste Dumping***MB1502065591 Johannesburg Domestic Service in English 0500 GMT 15 Feb 91*

[Text] The government has called for the establishment of an African committee to study ways of preventing Africa from being turned into the world's nuclear and toxic waste dump.

During the debate on the Nuclear Energy Amendment Bill in parliament, the deputy minister of mineral and energy affairs, and of public enterprises, and of transport, Dr. Piet Welgemoed, said such a committee could reach agreement prohibiting the dumping of toxic waste on the African continent.

Dr. Welgemoed said that, as South Africa's relations with the rest of Africa normalized, it was vital for this country to take the lead in the establishment of such an agreement. South Africa should make available its knowledge of nuclear technology.

The bill, which was supported by all parties, contains amendments regarding liability for nuclear damage and the transportation of nuclear waste.

**Conference on Tropical Rain Forests Opens in Accra***AB2502204291 Dakar PANA in English 1633 GMT 25 Feb 91*

[Text] Accra, 25 Feb. (GNA/PANA)—About 20 trade unionists, government officials and representatives of international agencies opened a four-day conference in Accra Monday on tropical rain forests in Africa.

The conference, organized by the Public Utility Workers' Union of the trade union congress, is being attended by delegates from Ghana, Cote d'Ivoire [Ivory Coast], Nigeria, Gabon, Zaire, Cameroon, Guinea Bissau and Congo. Resource personnel come from Britain, Italy, Germany, Sweden. It is sponsored by the Friedrich Ebert Foundation of Germany and the International Federation of Building and Wood Workers based in Geneva.

Participants will exchange views and information on the destruction of tropical rain forests in Africa and its attendant effects on the environment and workers.

In his opening address, Ghana's secretary (minister) for mobilization and social welfare, David Sarpong Boateng, stressed the need for better management of all forest resources. He urged the conference to address itself to the devastating impact which the destruction of our forests produce on the rainfall pattern and its consequent effect on food production." [no opening quote as received]

Boateng said the assault on the world's tropical forests has brought immense and growing costs in terms of degradation of the environmental resource base of the planet. This has also caused serious risks to the earth's life-supporting system and to human health and survival.

## ANGOLA

**Caxito Reforestation Project Outlined***91WN0245A Luanda JORNAL DE ANGOLA in Portuguese 13 Jan 91 p 2*

[Article from the Information Department of the Organization of Angolan Women: "We Are Going To Plant 500,000 Trees!"]

[Excerpts] The sun shines on the guava trees, the cashew nut trees, the papaya trees, the acacia trees, the lemon trees, and the orange trees. The bushes unite in an explosion of flowers of every color. The trees form straight lines. Everything is well organized, green, and pretty. The workers were irrigating when we visited the tree-planting project in Caxito.

In Caxito, this is a project of the ADPP (People-to-People Development Aid) in conjunction with the Ministry of Agriculture and the Institute of Forestry Development (IDF). The ADPP performed its first experiment in tree planting in March 1989 in the municipality of Bengo. As a consequence of that first campaign, 100,600 trees were planted in 15 neighborhoods. The goal is to plant 500,000 trees by 1991. More than 400 families and more than 500 volunteers participated in the campaigns, more than 50 percent of whom were women.

**A Soccer Field Every Minute**

Every minute, an area of tropical forest equivalent in size to a soccer field is lost. [passage omitted]

Desertification in the world in general and in Africa in particular is increasing day by day. In the southern part of Angola, drought is already one of the consequences of this ecological deterioration. Cutting firewood and not planting new trees has already created problems in Angola.

Also, south of Luanda, one can clearly see the ominous results of the lack of trees and the lack of understanding concerning the need not to degrade the environment. There are hundreds and hundreds of dead palm trees, a sickly forest of black, dry trunks that do not do anyone any good. They have already been used to make maluvo [a type of fermented drink]. People have killed the living palm trees by cutting into them in order to extract their sap. The trees have been cut down and have not been replanted. People are senselessly destroying nature.

Repairing the environment then becomes of primary importance. With this objective, some projects are now

under way to replant the forest. There is also a national tree-planting program and the Caxito project falls within its scope.

In this program, women are playing a very important role. [passage omitted]

#### **Planting Is Caring**

There are 70 Angolan workers employed in the Caxito project, with 15 ADPP solidarity workers working next to the people of the villages.

Anyone can come here to buy plants.

When we sell, we make a contract with the purchaser. A person can buy for example, 100 trees or 1,000. Then our promoters teach the purchaser how to plant and care for the trees, says Agneta Dahne, one of the ADPP administrators.

Then we follow up. If the trees grow well, then the purchaser is given the chance to buy used clothes. A used clothing program is integrated into the national tree-planting campaign in order to promote and support the campaign's participants.

In this time of so many difficulties, this used-clothing program is operating as an incentive to take care of the trees, says Agneta Dahne.

#### **Who Buys?**

It is mostly the farmers, whether large or small, who buy the trees. Since there are also many displaced families here, we want to help each of these families create a small garden.

**Make Young People Aware In Caxito, there is a Rural Technical School for orphans, war victims, and refugees. Across from the school, there is a vast field where each student plants a tree and then takes care of it personally during the period of his studies.**

In this field, one can see some trees that are already quite large which were planted by the first students, and other smaller trees planted by more recent students.

The idea is to make young people aware of the importance of the environment and tree-planting, says Agneta Dahne.

#### **Model Orchard**

The ADPP also has a model orchard where fruit trees are planted, with some shade trees around and flowers and bushes planted underneath.

The OMA [Organization of Angolan Women] of Caxito already has a location to create a model orchard too, with the help of the project's promoters.

But Isabel Van-Dunem of the OMA says that unfortunately the land has a lot of thick undergrowth. There is no machinery with which to clear it. We are hoping that

the Ministry of Agriculture will lend us the machinery. It is impossible to do the work just with machetes.

A motorized pump is also needed.

Isabel Van-Dunem says that there are several OMA brigades, composed of 10 women each, that can participate. This would be volunteer work.

#### **Lack of Time**

The OMA in Luanda also wants to promote women for this type of model orchards in the neighborhoods of Luanda, says Idalinda Rodrigues of the OMA.

But how can we expect progress in food production, in the management of natural resources, and also in health and education, when millions of women continue to be undernourished, undereducated, overworked, and overburdened by constant pregnancies? A woman's workday is generally longer than that of a man. It has been said that "the real energy crisis is the lack of time from which women suffer."

Without any control over their health and fertility, women will never be capable of participating totally in any development strategy, says Idalinda Rodrigues. Therefore, the leading role that women have in food production, in energy usage, and in the development of the community in general proves that development strategies will fail if this key resource—women and girls—continues to be ignored in the planning and implementation of development programs.

#### **Mobilizing Women's Forces**

It is necessary to bring the greatest possible women's force together in these tree-planting campaigns, says Fernando Mesquita, who is the adjunct director of the IDF in the Ministry of Agriculture. This is necessary in the sense that they themselves need to achieve self-sufficiency in firewood for domestic use and also in the sense of employing them in greenhouse work. Additionally, they could work in the cottage industry within the family economy, applying systems of agro-forestry. This means not just working the land but also planting trees.

We are now working together with the ADPP in Caxito, and we are planning to extend this idea to the southern provinces where there are arid and semiarid areas where the lack of vegetation has an even stronger impact.

In September, at the 24th session of the FAO [Food and Agriculture Organization] in Rome, there was a debate precisely on the subject of women's participation in the forestry sector, says Fernando Mesquita.

Last year, a meeting of the forestry sector of the countries of SADCC [South African Development Coordination Conference] was held in Tanzania, with the topic of the seminar also being women's participation in the forestry sector.



**BOTSWANA****Government Abandons Okavango Development Project***MB1302134391 Johannesburg International Service in English 1100 GMT 13 Feb 91*

[Text] The Government of Botswana has announced that it has abandoned its Okavango Water Development Project and its plans to dredge the Boro River, but that it has not ruled out the possibility of future dredging.

The announcement was made in a statement released jointly by the government and the environmental organization Greenpeace International, which had earlier called for the Okavango Delta ecosystem to be declared a protected world heritage site.

The minister of mineral and water affairs in Botswana, Mr. Archie Mogwe, said that Botswana would pursue the question of having the Okavango delta being declared a world heritage site. He said the government would not dredge for the sake of dredging but that it would review the matter if dredging became necessary as a last resort.

**GABON****Timber Industry in 'Serious Crisis'***AB1802200891 Dakar PANA in English 1740 GMT 18 Feb 91*

[Text] Dakar, 18 Feb. (PANA)—The exploitation of forestry products in Gabon, which employs about 15 percent of the country's workers, has been faced with a serious crisis for several weeks now related due to the international situation. [sentence as received]

The crisis is due to the fall in the value of the dollar, which gave advantage to Asiatic timber, the slow down in the European economy, the main market of the African timber and the Gulf crisis. The situation has forced the Gabonese National Timber company, which has the monopoly in the marketing of timber, to ask timber producers to cut down their production by 25 percent. This move, whose implementation started at the beginning of the year, has already caused the closure of a good number of workshops and the temporary unemployment of between 5,000 and 6,000 people in the rural areas.

In addition, these problems have aggravated the quarrel between the national timber company and other producers who accuse it of lack of competitiveness in marketing the Okoume timber which it monopolises, leaving the other timber species for them. The producers argue that the 18 percent marketing limit imposed on them is inadequate. On the other hand, the national company has in a year extended its delays in payments from two to four months.

Unlike other African countries, Gabon does not have to worry about its forest reserves, because the country is

believed to have 300 million cubic metres of forests, out of which 93 percent is exploitable. Due to the favourable equatorial climate, a total of four million cubic metres of forests can be cut each year.

**KENYA****Finland Provides Forestry Grant***EA2302220291 Nairobi Domestic Service in English 1900 GMT 23 Feb 91*

[Excerpt] Kenya has received a grant of 150 million shillings from Finland in support of afforestation. The permanent secretary for environment and natural resources, Mr. (Alaie Kimasale), said this in a speech read on his behalf by the deputy secretary in the ministry, Mr. Wambura, during the official opening of the Nakuru-Nyandarua forestry workshop at a Nyahururu hotel recently. [passage omitted]

**NIGERIA****Government Urged To Tackle Ecological Problems***91WN0256A Lagos THE GUARDIAN in English 23 Dec 90 p B7*

[Article by Olatunji Ogunyemi, Moscow State University, USSR: "Preserve Ecology To Save Life"]

[Text] Life on earth is as difficult to maintain as the morning dew on the grass. In recent times, human beings have come to realise that in perpetuating life on earth we have to preserve ecology. Over the past centuries, the process of industrialization and technological breakthroughs have left the environment depleted and sapped.

Nuclear power plants that were planned to provide cheap source of electricity as well as a means of defence have proved a new threat to ecology. The Chernobyl disaster of 1986 is still fresh in our memory and the after-effect is still being counted in Soviet Union. Tree felling which to many Nigerians is a source of energy has exposed our land to desertification. Threats to animals and other life species have become enormous. That is why Kenya's ban on the killing and exportation of elephant tusks is commendable and a victory to advocates of ecology preservation.

Pollution which is a facet of ecological problems is inherent in Nigeria and has become a thing of concern for the government. The importance attached to keeping our environment pollution-free made the government to establish the Federal Environmental Protection Agency (FEPA) and the declaration of environmental day every last Saturday of the month.

This body could be said to play a complementary role to what Green Peace [Greenpeace] is doing in U.S. The Green Peace, in fact, is the world's foremost environmental group, which recently alerted Nigeria including

other Third World countries of a fresh threat from toxic wastes. We are living witnesses to the chemical waste callously dumped in Koko Port in 1987 by an Italian company called Gianfranco Rafelli.

This time around as Nigerian hardly conducts effective checks on imported products. However, FEPA could be useful in this area by making its presence felt through effective monitoring and reporting of trends in ecological development or otherwise.

In order to live a healthier life, we need to pay more attention to ecological problems. The government should make concerted effort to preserve our rainforest. In fact, each state should have such preserve which could be used to generate fund if designed to promote ecotourism which combines sight-seeing with conservation. This could serve the purpose of developing love and respect for nature among our people.

Pollutants and other effluents need to be effectively monitored and reduced. Decree 58 of 1988 on pollution which stipulated a fine of 500,000 naira on any industry found to be polluting the environment and for each day it persist another 1,000 naira should be enforced. Our textiles industries, breweries, battery, oil producing companies as well as soap and toiletries manufacturing companies should be made to establish pollution safety control units to give quarterly reports to FEPA.

If UNICEF statistics on environmental degradation is to be taken into consideration, that some 14 million children under five years in developing nations die yearly of lack of potable water, poor sanitation, environmental pollution common diseases and malnutrition; then it is imperative that Nigeria including other African countries wake up to accept responsibility for future generations.

It is really shameful that African countries have to wait for foreign bodies to tell them of imminent dangers in their environment before they take measures.

Nigeria is a country where air and water are hardly protected from pollution. What do you say of emission from generators at government buildings and individual houses, burning and dumping of refuse in the Lagos at places like Oko-Baba along Third Mainland Bridge and carbon monoxide from dilapidated vehicles at Obalende among others? These are potential environmental dangers which should be curbed.

This nation could be pollution-free by the year 2000 if measures are taken to effectively anticipate, prevent and attack the causes of environmental degradation.

Furthermore, the government should intensify campaigns on environmental literacy programme to teach our people to learn to utilise forest resources without damaging the environment and to conserve plant and animal species.

Forest destruction, has been discovered by scientists, to be important factor in the so-called green house effect or

the warning of the globe. This is why many nations all over the world are gearing up efforts to protect areas because of congestion and clustering by inhabitants due to rural migration. Our rural areas should be developed by providing infrastructures and small scale factories with the aid of inducing people to stay behind and live in the rural areas serving their rainforests e.g. USSR, Brazil, Guyana among others.

As we find solutions to our economic problems, let us follow trends in our ecology and stem any tide that might expose us to wider ecological problems because if the forest disappears, nature and man perishes along with it. This is the time of conscious change in the relationships between us and the biological resources upon which our welfare depends. We should not be late starters.

## SOUTH AFRICA

### Government Suspends Commercial Seal Culling

MB1402151891 Johannesburg Domestic Service  
in English 1100 GMT 14 Feb 91

[Text] The government has decided to suspend all commercial seal culling on the South African coast.

The minister of national education and environmental affairs, Mr. Louis Pienaar, announced at a news conference in Cape Town that the decision had been taken despite the findings of an independent scientific committee.

The committee, under the chairmanship of the chief executive of the Southern Africa Nature Foundation, Dr. John Hanks, found that there was no scientific reason for halting the proposed culling of seals.

Mr. Pienaar said the government, however, had decided to suspend all culling until it had received another scientific report expected within two years.

In the meantime, the necessary steps would be taken to protect certain threatened bird species against seals.

He said the cabinet had also decided to negotiate with Namibian authorities on the joint management of the seal resources of the South African coast.

### Environmental Advantages of Nuclear Power Noted

91AF0634Z Johannesburg FINANCIAL MAIL  
in English 18 Jan 91 p 57

[Text] Nuclear power, all but written off after the Three Mile Island and Chernobyl disasters, is making a comeback. And, ironically, its resurgence is being fuelled by environmental fears.

Nuclear power plants are now increasingly seen as non-polluting alternatives to coal and oil-burning plants. Nuclear plants release no noxious gases while coal- and oil-burning plants despoil the environment and are a

major factor—in the opinion of many experts—behind the greenhouse effect. For example, in the Highveld, where most of Eskom's [Electricity Supply Commission's] coal-fired plants are located, the air is considered among the most polluted in the Western world.

In June *FORBES* magazine called nuclear power "the greenest form of power" and cited the growing realisation in the United States that nuclear power could be more environmentally acceptable than coal.

"Nuclear power is making an important contribution to the environment," says the president of the American Nuclear Society, Walter Loewenstein, who spoke at last year's Eskom-organised symposium on Nuclear Technology in Southern Africa. "A recent study cites France (which generates more than 75 percent of its electricity from nuclear power) as having reduced emissions of SO<sub>2</sub>, NO<sub>2</sub> and dust by 56 percent, nine percent and 36 percent, respectively, from 1980 to 1986."

In this period, France's nuclear generation increased fourfold while total electricity generation rose by only 40 percent, he says.

Waste disposal has always been the Achilles heel of nuclear power, but many countries are solving the problem with state-of-the-art waste storage facilities. The Atomic Energy Corp has never had trouble with its facility for low- and medium-active nuclear waste at a remote, geologically stable site at Vaalputs in the north-western Cape. Highly active waste is sent to France for more processing.

If environmentalists drop their objections to nuclear power, plant construction could boom worldwide. And SA [Republic of South Africa], sitting on 14 percent of the world's uranium reserves, would be a big winner.

However, with uranium prices at rock bottom for much of the Eighties, SA is squandering much of this valuable resource. Uranium is found mainly in the same rock as gold and is produced as a byproduct of gold mining. But low prices mean it is not profitable to take more than a fraction of the mines' uranium "tailings" and turn it into the "yellow cake" uranium (ammonium diuranate) used to produce U235 fuel for nuclear power generation. Unutilised tailings are either buried under tons of rubble or are simply used to fill disused mineshafts.

"These tailings will thus no longer be available for exploitation," says Atomic Energy Corp CE Waldo Stumpf. "As we expect the world nuclear industry to take off again from 1995 onwards, and as SA will need to build additional nuclear power stations, we cannot afford this waste."

With the virtual suspension of nuclear plant construction worldwide, sending the uranium price down from US\$43/lb in 1978 to below \$10/lb now, production at SA's gold mines has dropped to only 3,000 t/year, from 4,600 t/year in 1986. Gencor was also forced to close its Beisa uranium mine. But if the price revives, SA's potential is enormous: it has known uranium reserves of 432,500 t, as well as 130,000 t of thorium, which is used in converter reactors.

Stumpf reckons that the corporation could make uranium mining more profitable by developing new technologies to enrich uranium locally. "We hope to perfect these more economically viable technologies, such as centrifuge and laser enrichment processes, over the next five years so that the 'yellow cake' can be transformed into more valuable U235, mainly for export. Should we be successful, the added value will be about 300 percent." The company is also working on ways of making the cost of nuclear power more competitive with coal-based power.

While the brighter outlook for nuclear power promises to rescue SA's uranium industry, it may also boost SA's own nuclear power industry. The ANC [African National Congress] has promised a no-nukes policy—which will include shutting down SA's only nuclear plant at Koeberg and scrapping plans to build others. But nuclear power's greener image may cause the ANC to have a change of heart. In any event, it probably will have to. The country's massive coal reserves could begin running out by the middle of the next century. Eskom now estimates that its last coal-fired power station using local coal must be commissioned by 2045. And that's not as far off as it sounds, considering that it can take 10 years or more from preliminary planning to the final commissioning of a 3,500 MW power station.

Coal now provides 89.6 percent of SA's power. Nuclear generates 7.7 percent and hydroelectric the rest. In the United States, by comparison, about 20 percent is generated by nuclear power plants, according to Loewenstein, of the American Nuclear Society. Worldwide, there were 417 nuclear plants operating at the end of 1989 producing 17 percent of the world's electricity, he says.

With Eskom already well advanced on choosing sites for new nuclear power stations, SA should be drawing more nuclear energy from early next century. "We have identified two potential sites—one on the Cape south coast (Bantamsklip, near Gansbaai) and one on the Cape east coast (Oyster Bay, near Port Elizabeth)—and we are also looking for sites on the Cape west coast," says Eskom CE Ian McRae.

Adds Eskom spokesman Johan van Heerden: "With the average life expectancy of any power station in the region of 40 years, SA could be totally dependent on nuclear power generation by 2085."

### **Environmentalists Lose Round in Cape Breton Power Project Fight**

91WN0262A Toronto THE GLOBE AND MAIL  
in English 19 Jan 91 p A4

[Article by Kevin Cox, Atlantic Bureau: "Environmentalists Lose Third Round; Federal Court Rejects Latest Challenge Against Cape Breton Power Project"]

[Text] Halifax—Opponents of the \$436-million Point Aconi Power Plant proposed for Cape Breton suffered their third consecutive setback yesterday when a court ruled that the federal government does not have to hold an environmental assessment on the project.

In a ruling handed down late yesterday, Mr. Justice Andrew MacKay of the Federal Court rejected claims by two environmental groups and residents of the area that an assessment is needed because of public concern about the effects of the project.

Construction began on the project on Boularderie Island, north of Sydney, last year. It is scheduled to begin operation in 1993.

Judge MacKay said Fisheries Minister Bernard Valcourt acted within his discretion in deciding not to order a full environmental assessment of the project last year.

He noted that it was not up to the court to decide whether Mr. Valcourt made the right decision, only whether the minister and his department acted in accordance with the law.

Greenpeace Canada and the Halifax-based Ecology Action Centre said the federal Department of Fisheries and Oceans ignored major environmental implications such as the impact on the nearby Atlantic Ocean of discharges from the plant and the contribution the quantities of carbon dioxide to be given off by the plant would make to global warming.

The judge said that, because there are no standards for carbon dioxide emissions, it is impossible to say that the coal-fired plant would create a pollution problem with its massive carbon dioxide emissions.

Opponents of the plant had previously appealed to the provincial Environmental Control Council and the federal Fisheries Department to either halt construction or order that a full environmental assessment by a federal panel be conducted.

### **British Columbia Pulp Mill Fined for Toxic Spill**

91WN0263A Vancouver THE SUN in English  
11 Jan 91 p B5

[Article by Glenn Bohn, SUN Environment Reporter: "Toxic Spill Into Peace Means \$200,000 Fine for Pulp Mill"]

[Text] A provincial court judge has imposed Canada's second-highest pollution fine against a pulp mill in northeastern B.C.

FibreCo Pulp Inc. of Taylor was fined \$200,000 Thursday for a toxic chemical spill last January into the Peace River, B.C. environment ministry official Rick Krehbiel said.

"Cariboo Pulp and Paper (of Quesnel) was fined \$275,000 in mid-December," Krehbiel said. "I think that is the record to date. As far as I know this (FibreCo) fine is second."

The B.C. government recently changed its Waste Management Act penalties to provide for fines of up to \$1 million.

"They (FibreCo) knew ahead of time what they were supposed to do and they didn't take steps to control it," Krehbiel said.

Dennis Black, FibreCo's mill manager, did not respond to a request for an interview.

Meanwhile, a Vancouver legal-advocacy group released an article by a federal government economist arguing that B.C. pulp mills can afford tougher pulp pollution laws.

Bill Andrews, a spokesman for an anti-pulp-pollution campaign claiming to represent groups with a total of 250,000 members, said the article shows Premier Bill Vander Zalm was wrong last month when he vetoed tougher dioxin regulations.

John Reynolds resigned as B.C. environment minister as a result of the premier's decision. Vander Zalm argued he was protecting jobs, since "the forest industry is currently facing very difficult economic times with resultant layoffs."

But Environment Canada economist Bill Sinclair, in the March edition of the journal CANADIAN PUBLIC POLICY, declares that the pulp-and-paper industry is not economically fragile and can afford pollution controls.

Sinclair, who wrote a 1988 Environment Canada report on pulp-mill pollution, cited studies that he said show that most mills operating in Canada in 1988 could have adopted the latest effluent-control and treatment technologies "for a capital investment of not more than \$30 million" per mill.

That works out to about \$14 per tonne of pulp produced, Sinclair noted, or less than four per cent of the average mill's cost of producing pulp.

He said the proportion of money spent in pollution controls "declined continuously" between 1971 and 1985.

"The industry invests heavily on new production capacity during buoyant economic period," he found.

"The industry does not use these same buoyant periods to increase the amount it invests in pollution controls, as a result there is a relative decline in the percentage of total investment on environmental safeguards during high-profit periods."

Sinclair concluded that environmental agencies have overestimated the negative economic impact of pollution controls and the degree to which Canadians benefit from concessions to the pulp industry.

"Perhaps even more important, environmental authorities have failed to take into account the enormous costs they may be imposing on present and future generations of Canadians as a result of concessions to pulp-and paper manufacturers."



### **Government To Spend Billions for Pollution Control Measures**

HK2402034491 Beijing CHINA DAILY (BUSINESS WEEKLY SUPPLEMENT) in English 24 Feb 91 p 3

[By staff reporter Wu Yunhe]

[Text] China is expected to invest about 220 billion yuan (\$42.3 billion) in the next decade in developing new technology and equipment to improve environmental protection, according to a senior official.

The money earmarked for environmental protection would be about 15 percent of funds planned for industrial development, and was in line with the government's financial strength and national economic development, said Qu Geping, head of the State Environment Protection Bureau.

China also hoped to receive some financial assistance from other countries for its environmental protection programme over the next 10 years, Qu added.

To realise the government's ambition, the bureau is now drawing up its Eighth Five-Year Plan (1991-95), which is expected to be submitted to a national environmental protection conference scheduled to open in October this year.

The environmental protection funding, Qu said, would go mainly to the energy, chemicals, cement and paper-making industries, the major polluters of China's environment.

The money would be used to update technology and equipment so that the industries could make the most efficient use of raw materials and reduce residue discharge, he said.

There were nearly 400,000 small, coal-consuming boilers in China to be renovated with the latest technology and equipment, Qu said.

Seventy percent of China's pollution came from industry, he said.

China currently has 2,491 enterprises and government departments engaged in environmental protection, and the government has increased investment in the area from 2 billion yuan in 1982 to 10.2 billion in 1989.

Strong financial backing from the government, Qu said, had helped the country's industrial enterprises with annual output value exceeding 10,000 yuan (\$1,900) to reduce their waste water discharge from an average of 358 tons in 1988 to 221 tons in 1989.

### **Government To Disburse Funds for Environmental Protection**

OW2602020191 Beijing in English to East and South Africa 1700 GMT 24 Feb 91

[Text] Environmental protection will be a top priority for China in the next 10 years. The state plans to invest about 220 billion yuan, or about \$42 billion, in various projects.

According to a state environmental protection official, the money will go to develop new technology and equipment. The official says the money earmarked for environmental protection is about 50 percent of the funds planned for industrial development. Most of the funds will go to industries responsible for the country's pollution including the energy, chemical, cement, and paper making industries. China now has nearly 25,000 enterprises and government departments engaged in environmental protection.

### **State Issues Provisions on PCB Pollution Control**

OW0303142991 Beijing XINHUA Domestic Service in Chinese 0220 GMT 1 Mar 91

[Text] Beijing, 1 Mar (XINHUA)—To strengthen control over electric power installations and waste materials containing polychlorinated biphenyls [PCBs] as well as to protect the environment, the State Environmental Protection Bureau and the Ministry of Energy Resources recently issued the "Provisions on the Prevention of Environmental Pollution by Electric Power Installations and Waste Materials Containing PCBs," and asked all localities to strictly enforce the provisions as of today.

PCB is a synthetic organic substance with good electrical insulating property and chemical stability. It has been widely used in the manufacturing of electric power facilities, and is a type of waste material throughout the world. Our country produced more than 10,000 tonnes of PCBs from 1965 to 1974, and used 9,000 tonnes of it as a medium in electric capacitors, most of which have now been scrapped. A key factor in preventing environmental pollution by PCBs is finding ways to effectively control and destroy these capacitors.

The "Provisions on the Prevention of Environmental Pollution by Electric Power Installations and Waste Materials Containing PCBs" call for environmental protection departments at all levels to enforce unified supervision and control over the prevention of PCB pollution in localities under their jurisdiction. The provisions call for departments in charge of units with power installations containing PCBs to enforce supervision and control over the prevention of such pollution in the installations of those units. Individuals and units causing PCB pollution must also control such pollution within a specified time.

The "Provisions on the Prevention of Environmental Pollution by Electric Power Installations and Waste

Materials Containing PCBs" call for units and individuals possessing power installations containing PCBs to report to and register with local environmental protection departments. It is necessary to report to and seek permission from local environmental protection departments 15 days before moving, treating, and disposing of power installations and waste liquid containing PCBs. Units currently using power installations containing PCBs must adopt measures to prevent PCB leakage. All units and individuals are strictly forbidden to sell, purchase, or dismantle abandoned power installations containing PCBs.

The "Provisions on the Prevention of Environmental Pollution by Electric Power Installations and Waste Materials Containing PCBs" call for all units and individuals moving or transporting power installations or waste materials containing PCBs to seek permission from environmental protection departments at or above the city level. Those units and individuals moving and transporting such power installations and waste materials across localities must seek permission from environmental protection departments at the immediate higher level. Activities involving treatment and disposal of waste materials containing PCBs must be screened by competent departments and environmental protection departments at the city level, and approved by environmental protection departments at the provincial level before they are carried out.

#### **Li Peng Submits Draft Law on Preventing Soil Erosion**

*OW2502090791 Beijing XINHUA in English  
0838 GMT 25 Feb 91*

[Text] Beijing, February 25 (XINHUA)—Premier Li Peng submitted a draft law to legislators today in which he suggests they deliberate the formulation of a law to protect water conservation and prevent soil erosion.

In his motion to the on-going 18th Session of the Standing Committee of the Seventh National Peoples Congress [NPC], Li said that the draft law was designed to prevent soil erosion and improve water and soil resources. In addition, the law would provide a means to reduce the effects of flooding, droughts and windstorms, as well as improve the biological environment and develop production.

The topography of China, a mountainous country, reveals that over two thirds of the country, or 9.6 million square kilometers, are covered by mountains and hills. As a result, soil erosion damages the biological environment and greatly hinders efforts to improve the living standards and economic development in affected areas.

Yang Zhenhuai, minister of water resources, explained the draft law to the legislators and attributed the serious soil erosion problem to over-exploitation of both land and plant resources. Yang cited a number of other factors including the denuding of forests, overgrazing, as

well as to an ignorance of water and soil conservancy in the development of mines, roads, and other projects.

Yang said that while the Chinese Government did issue two regulations concerning water and soil conservancy in 1957 and 1982, nonetheless a new law is necessary to harness the serious soil erosion problem and to strengthen supervision over it.

The minister said that the draft law established a new guiding principle for water and soil conservancy which focuses major efforts on the prevention of soil erosion. Yang compared this with the previous practice which placed equal emphasis on the prevention of possible soil erosion and on fighting existing soil erosion.

XINHUA has learned that the 44-article draft law contains provisions aimed at harnessing soil erosion affecting barren hills and wastelands, as well as wilderness areas.

Yang said that during the period required to draft the law, experts conducted numerous investigations and research projects related to soil erosion. The experts gathered suggestions from local residents in Hebei, Shanxi, and Shaanxi Provinces, as well as in the Inner Mongolian Autonomous Region, where the soil erosion problem is relatively the most serious in the country.

#### **New Technique Reduces Application of Pesticides**

*OW2002093891 Beijing XINHUA in English  
0845 GMT 20 Feb 91*

[Text] Beijing, February 20 (XINHUA)—Chinese scientists have developed a new technique of spraying farm chemicals, which greatly increases efficiency and reduces environmental pollution.

Experts believe that the technique is the first of its kind in the world and is specially suitable for developing countries.

The "target spraying" technique was the result of a key research project during the state's Seventh Five-Year Plan period (1986-90).

According to scientists from the Institute of Plant Protection under the Chinese Academy of Agricultural Sciences, which sponsored the research project, the technique is able to increase the deposit rate of pesticides on plants from 30 percent in the past to over 60 percent, and to reduce the amount of wastage of pesticides by 30 percent to 50 percent.

According to the scientists, China now uses a total of 2.5 million tons of farm chemicals each year, among which 1.5 million to 1.75 million tons are wasted. The application of the new technique will save 800,000 tons of pesticide, as well as over 16 billion yuan and large amounts of water.

The new technique was put into trial use last year on a total of 24,000 hectares of farmland in seven provinces and achieved a total economic benefit of over 20 million yuan.

#### **Environmental Bureau Finds Literature Society**

OW2202170391 Beijing XINHUA in English  
1426 GMT 22 Feb 91

[Text] Beijing, February 22 (XINHUA)—An environmental literature society was founded here today with the aim of enhancing people's awareness of environmental protection.

Addressing the founding ceremony of the society, Qu Geping, director of the State Environmental Protection Bureau, said that though China has made great progress in protecting the environment, there are still problems in this respect and a lot of people are still not aware of the importance of environmental protection.

"We must do our best to publicize environmental protection in various ways to enhance people's awareness of the problem," he said.

The council of the society comprises a number of well-known writers, artists, film producers and journalists.

The society will organize writers and artists to make on-the-spot investigations and sponsor competitions for literary works dealing with the environment.

#### **Environmental Protection Efforts in Tibet**

OW1702051191 Beijing XINHUA in English  
0221 GMT 17 Feb 91

["Tibet backgrounder (9): Environmental Protection"—XINHUA headline]

[Text] Lhasa, February 17 (XINHUA)—The highest plateau in the world, Tibet has been regarded as one of the planet's most valuable natural museums. It is an enchanted region with distinctive species of plants and animals which can be found on glaciers and in pasture and forests.

According to an official of the Tibet Autonomous Regional government, Tibet has established seven nature reserves, covering a total area of 5,000 sq km, since 1985.

The 42-sq-km Medog Nature Reserve, noted for its vertical climate belt, has a dozen varieties of rare plants and is inhabited by more than 40 species of rare animals, including the world-cherished takins.

The vast Dragon Spruce Forests in Gamxiang, one of the four plant nature reserves in the region, is very unique. Its per-unit timber storage is about four or five times that of the ordinary spruce.

In addition, rare species of long-leaf pine and spruce and redwood trees can also be found in the Himalaya mountainous areas. Nanmu tree, an even-grained variety of

cedar, yunnan camphor tree and douglas fir tree, a rare species left over from the third period of the Cenozoic Era in China, can be seen in the Zayu Nature Reserve.

As Tibet's smallest nature reserve, the Pagqi Reserve covers only 0.1 sq km, but it boasts many century-old cypress trees. Among these mighty cypresses, one 2,500-year-old specimen has been named "the living relic" and "king of the world's cypress trees."

In the Zhamgou Nature Reserve in Nyalam, which is near the border with Nepal, there are snow pheasant, brown-tailed pheasant and blood pheasant, as well as lesser panda. All these rare species are under the state's priority protection.

A new nature reserve has recently been set up with the help of the United States. Located in the vicinity of the world's highest peak, 8,848-m Qomolangma, the reserve was set up to protect the area from being ruined by the increasing number of mountaineers and tourists.

#### **Plan To Boost Weather Research Forecasting Announced**

HK2702020791 Beijing CHINA DAILY in English  
27 Feb 91 p 1

[By staff reporter Liang Chao]

[Text] Top officials of the State Meteorological Bureau (SMB) announced yesterday plans to update China's weather research and forecasting network within the next 10 years.

This would help bring the country up to the advanced world standards of the late 1980s and fill the gap in some aspects of meteorological research, said bureau director Zou Jingmeng.

Zou made the announcement yesterday at the opening session of a national conference on meteorology in Beijing, attended by 180 officials and experts from 29 ministries and institutes across China.

During the next 10 years, Zou promised, the meteorological services provided by the SMB and its local agencies across the country will be linked closely with the whole national economic development in an effort to meet its demands.

According to Zhang Jijia, deputy director of the SMB, the proposed network will be composed of the following technological and professional systems:

- comprehensive atmospheric monitoring system;
- comprehensive meteorological communication system with various operational channels;
- computerized automatic system of treating and searching weather data and information;
- weather forecasting and analyzing system based on updated numerical forecasting;
- meteorological services system using the country's modern medium channels.



The central government was said to have earmarked an investment of 600 million yuan (about \$1.1 million) for the SMB's development programme, which does not include funds already being used by the key projects, under construction during the first five years of the overall 10-year plan.

### **Rising of Bohai Sea Poses Environmental Problems**

*OW2002082391 Beijing XINHUA in English  
0618 GMT 20 Feb 91*

[Text] Beijing, February 20 (XINHUA)—China's Bohai Sea is rising steadily, the PEOPLE'S DAILY reported today.

The national paper warned that this could cause environmental problems.

According to geologists and oceanographers, the Bohai Sea rises as high as six to eight mm a year except for the area bounded on the south by the Shandong Peninsula, which is falling slowly.

The experts agree that the phenomenon reflects the global greenhouse effect and local movements of the earth's crust.

## REGIONAL AFFAIRS

### Taiwanese Driftnet Fleet Stays Away From South Pacific

BK1402092291 Hong Kong AFP in English 0642 GMT 14 Feb 91

[Text] Wellington, Feb 14 (AFP)—Taiwan's controversial driftnet fishing fleet appears to have stayed out of the South Pacific during the current tuna season, New Zealand's Ministry of Agriculture and Fisheries (MAF) said Thursday.

Driftnetting, which uses very long and fine nylon nets, is regarded as extremely detrimental to the environment and is outlawed inside the exclusive economic zones of South Pacific nations.

Only Taiwan continues to practise it after South Korea and Japan agreed, in the face of strong diplomatic pressure, to give it up.

MAF senior scientist Talbot Murray said MAF observers on New Zealand tuna boats had so far sighted only five driftnet vessels in fishing grounds east of New Zealand.

United States fishing boat owners had been told there were only seven Taiwan driftnetters in the South Pacific this season and only 11 licences had been issued by Taiwanese authorities.

This compares with confirmed sightings of 11 Taiwanese driftnetters in the region last summer and more than 100 the year before.

The albacore tuna season in the Tasman Sea and the South Pacific runs from December to about April.

Mr. Murray said it appeared most of the Taiwan fleet had again gone to the Indian Ocean.

The apparent move from South Pacific by the vessels was "absolutely fantastic" he said.

New Zealand vessels have so far reported a slow albacore season this year.

Mr. Murray said boats were only now starting to get good catches as the migrant tuna appeared to be reaching the waters east of New Zealand late, possibly because of climatic and weather conditions rather than depletion of tuna stock.

### Asian Development Bank Provides \$815,000 to Indonesia From Japan Fund

OW1402111191 Tokyo KYODO in English 1023 GMT 14 Feb 91

[Text] Manila, Feb. 14 KYODO—The Asian Development Bank (ADB) on Thursday approved two grants to Indonesia for environment and investment projects totaling 815,000 dollars from its special Japan fund.

The first grant, for 375,000 dollars, is intended for the "enhancement of investment services" through Indonesia's investment coordinating board —Badan Koordinasi Penanaman Modal (BPKM).

The grant, to run from May to October, is aimed at strengthening investment policy and facilitating investment project implementation, the bank said.

The second grant, for 340,000 dollars, is to help Indonesia's Ministry of Industry establish and implement environment analysis measures, the bank said.

It said environmental issues concerning the management of pollution in rivers and the disposal of hazardous wastes are being given the highest priority in Indonesia.

"Since industrial development is among the major causes of such problems, environmental impact assessment in the industry sector is considered a key to solving these environmental problems," the bank said.

## BURMA

### Government Signals Change in Logging Policy for Thai Firms

BK0403020391 Bangkok THE NATION in English 4 Mar 91 p B3

[By Aphisak Thanasetthakon]

[Text] Burmese authorities in Rangoon have signalled a shift in the country's logging policy following their successful retaking of some areas formerly controlled by ethnic rebels in northern Burma, according to sources in the logging industry with business ties in the neighbouring countries.

Burma, officially known as Myanmar, has moved its soldiers into these areas and planned to build infrastructure facilities, such as roads, power plants and saw mills.

Sources said Thai concessionaires with logging agreements with the Rangoon regime face more conditions if they want to continue their business.

For example, Rangoon has indicated that logging activities should help generate income to pay for the infrastructure development.

It also said loggers should contribute a minimum of US\$1 million per project. Otherwise, their activities will be prohibited.

Sources said it is likely that Rangoon will ask Thai logging firms to increase their "involvement" in the development effort in the following stages.

"At present, Rangoon soldiers have control over several areas where Thai firms are doing business. Some loggers have to accept the conditions because they have already invested a substantial amount while others have decided

to quit. Investment by some firms has exceeded Bt100 million each," said one source.

Rangoon soldiers also contend that they will be able to provide better protection to Thai firms.

Since the request for financial contribution in development programmes is new, some Thai firms have sought a clarification from Myanmar Timber Enterprise, Rangoon's state unit in charge of logging concessions, but Myanmar Timber said its organisation and the military are separate.

Sources said since some areas, formerly controlled by ethnic rebels, especially those in northern Burma, are now retaken, Rangoon has decided to shift its logging policy with a view to conserving its natural resources.

This policy shift is underway in the form of more conditions facing Thai firms.

They said Rangoon is also probably interested in retaking the logging business from Thai firms because it is now possible in some areas under its military control.

This trend will drive Thai firms out of Burma and encourage them to seek logging opportunities in Cambodia.

Several Thai firms have ventured outside Thailand following the government's closure of all logging concessions in Thailand a few years ago.

Burma has been one of the major sources of woods for Thai industries in the past years.

Earlier, Thai firms were welcomed as Rangoon saw the opportunity to earn large amounts from logging in the border areas controlled by ethnic rebels.

### **Reputed Drug Trafficker 'Forced' To Join Teak Logging Deal**

*BK1602011791 Bangkok THE NATION in English  
16 Feb 91 p A4*

[By Kim Gooi]

[Text] Homong, Shan State—Reputed opium warlord Khun Sa claims he is being forced to take part in a three-way government deal to destroy the last major teak forest in Southeast Asia, located in Burma's Shan State.

The result of the deal has damaged the environment of the once pristine state. It has also brought unprecedented wealth and development to the impoverished but resource-rich land. People are coming in droves to Homong, drawn by its wealth and the security provided by Khun Sa.

Homong, Khun Sa's headquarters, is situated 16 kilometres from the Thai border and straddles one of the most inaccessible mountainous areas of the region.

Preferring to be called a Shan nationalist and freedom fighter rather than by some of the more notorious titles the world has given him, Khun Sa, in an interview last month, angrily rejected the charge made against him by the U.S. Drug Enforcement Administration that he is the world's number one heroin trafficker.

The leader of the Mong Tai army claimed he does not deal in opium or heroin, but simply taxes the illicit goods as they pass through the area he controls in Shan State.

But some sources say there are six heroin factories on the Burmese side of the border under his control.

In a video-taped message he sent to U.S. President George Bush last year, Khun Sa invited narcotics agents to come to his territory and see for themselves.

The video also shows miles and miles of teak forests, the last in the world, being cut down by Thai timber companies. Khun Sa explained to Bush in the video that because of the deals Thai logging companies had signed with the Rangoon military regime, the Shan people had no choice but to cooperate and allow the "rape" of their forests.

The message was that to go against the Thai companies would be courting the same fate as the Karen ethnic rebels. The Karens' refusal to cooperate cost them the loss of most of their bases when Thailand allowed its territory to be used by the Burmese army as a springboard to attack the rebels.

According to sources in the region, seven Thai timber companies are denuding surrounding forests of valuable teak logs. Profits are split three ways—the Burmese government, Khun Sa and the timber merchants, they say. The timber companies have built three roads into the rugged mountains of Khun Sa's domain around Homong.

The logging has transformed his once drab military camp into a thriving boom town. Along the timber roads travel pickup trucks laden with Thai consumer goods, mule caravans, traders and settlers from the interior. From Burma come antiques, handicrafts, gem stones, jade and cattle for the hungry Thai market.

Taxes are collected—Bt500 per head for cattle and Bt600 for a buffalo. A registration fee of Bt300 is levied on each basketload of raw jade and another five percent is charged on the value when it is sold in Thailand. Most of the jade is sold to a company belonging to Khun Sa in Chiang Mai.

The amount of taxes collected per month exceeds US\$500,000 (Bt12.5 million), according to an officer of Khun Sa. It is not known how much of that is from opium and heroin, most of which comes from northern Shan State, the Kokang Area and Wa State, the officer said.

The officer claimed that taxes from drugs and the revenue from timber make up the vast majority of Khun

Sa's income. The total collected amounts to several million dollars per month, he said.

Homong is now a prosperous town. There are nine schools providing free education, a 100-bed hospital with three doctors, a Buddhist monastery that reportedly cost Bt1 million, a recreation park and a new market opened last March. Over 50 houses in the market square were given free to officers of the Mong Tai army.

Elsewhere Khun Sa has built 100 houses for his officers. Young recruits, some barely 10 years old, are flocking into Homong. After six months of training, the boys are sent to military schools until they are 16 when they are elibly for frontline combat.

The strength of the Shan army has reached 20,000 fully armed combatants, from 16,000 six months ago, Khun Sa said.

According to one senior officer, the army also is getting access to sophisticated weaponry.

"We have our own armoury making mortar, recoilless rifles, hand grenades, mines and various kinds of shells. We need only to buy small arms like M-16s, AK-47s, sub-machine guns and SAM-7 missiles," he said, adding that it was easy to buy the missiles at the Afghanistan border for \$36,000 apiece.

The population of Homong has grown to 4,000 since it was carved out of virgin mountain territory in 1985. Its name has spread far into Shan State and settlers are still coming, some trekking a whole month to get there.

They are given free land to cultivate, seedlings to last a year, a pair of buffaloes and materials to built their houses. To the long-suffering Shan peasants, down-trodden and subjected to Burmese army brutality, coming to Khun Sa's Homong is like entering a new world.

Forty five-year-old kaw came with his wife, Nang On, 41, and five children from Hsipaw in northern Shan State five years ago.

"Back in my old village we were kicked around like animals by the Burmese military," said Kawe. "They press-ganged us into carrying ammunition to the front-line and forced us to sell our produce at cut-rate prices. When we first came here we could hardly believe it; this is a land of promise."

## SOUTH KOREA

### Envoy Says Nation Must Increase Environmental Concern

SK2802104891 Seoul YONHAP in English 0805 GMT  
28 Feb 91

[Text] Seoul, Feb. 28 (YONHAP)—South Korea is the world's fastest growing producer of carbon dioxide and

must prepare for international emissions controls before exports suffer, the official in charge of environmental negotiations said Thursday.

Ambassador-at-large Kwon In-hyok, head of delegations to several international forums on environmental topics, told reporters that industrialized countries were making substantial efforts to control global warming and Korea could suffer as a result since it uses large quantities of fossil fuels.

"The advanced nations of Western Europe have a target of fixing carbon dioxide emissions at last year's level by 2000. The United States has expressed a will to freeze production of such causes of the greenhouse effect as chlorofluorocarbons (CFCs) and carbon dioxide at 1987 levels," Kwon said.

The Inter-governmental Negotiating Committee (INC) for a framework convention on climate change would discuss global warming in its second meeting in Nairobi, Kenya, in June and in Geneva in September and December.

Kwon said he was embarrassed when Korea was fingered as having the greatest growth of carbon dioxide emission in the world over the last 15 years at a recent meeting of the preparatory committee for the UN conference on environment and development, but he still believes emissions by developing nations should not be controlled until after a long grace period.

"In the developing countries, carbon dioxide emission should be controlled on a gradual basis in accordance with their particular circumstances. Control should be implemented after a considerable period of preparation," Kwon said.

While international awareness was expanding impressively, Korea was slow to see environmental problems as serious, he said, noting that accurate reports on levels of carbon dioxide and CFCs are unavailable here.

Nations will discuss a wide range of environmental subjects at a number of meetings in the first half of the year.

In March, the preparatory committee for the UN conference on environment and development meets in Geneva. The conference is in Rio de Janeiro, Brazil, in June 1992. The second meeting of the ad-hoc working group of legal and technical experts on biological diversity also meets in March to prepare for "a convention on the conservation of biological diversity."

Other meetings are on the 1989 Basel convention on the control of transboundary movement of hazardous wastes and their disposal, in Kenya in March, and on the 1987 Montreal protocol on substances that deplete the ozone layer, in Bonn in April and June.

To respond effectively to the worldwide movement to curb environmental deterioration, it is essential for the government to enlighten enterprises and the general

public, Kwon said, calling for active publicity of environmental preservation and energy conservation.

A career diplomat, Kwon has served as minister at the Korean Embassy in Paris, counselor in Senegal and ambassador to Haiti.

## PHILIPPINES

### Government Says U.S. Should Pay for Damaged Baselands

HK2602033191 Manila BUSINESS WORLD  
in English 26 Feb 91 p 10

[By Marie Antonette Z. Cruz]

[Text] The rehabilitation of base lands and reverted base lands damaged by pollution or environmental problems must be borne financially by the U.S. Government, the Department of Environment and Natural Resources [DENR] ruled. The provision will be an adjunct to the existing bilateral agreements between the Philippines and the United States.

Guidelines released by the office of Gregorio C. Magdaraog, DENR assistant secretary for Luzon operations, provide that a joint RP [Republic of the Philippines]-U.S. team of environmental experts must first determine the extent of the pollutive damage before recommending its appropriate rehabilitation.

Moreover, the DENR ruled that disposition of natural resources in these areas, whether forest, land or mineral, shall be subject to the department's approval.

The above guidelines are part of DENR's proposed Environmental Protection Program in the baselands. This submits that all environmental concerns should be subject to DENR regulation. Identified environmental hazards include noise pollution, reforestation activities, utilization and exploitation of natural resources, oil slicks, solid, liquid or gaseous waste management, and hazardous and toxic waste disposal, among others. The

guidelines also confer the Pollution Adjudication Board the role of final arbiter in all pollution concerns.

The DENR also pushed that the U.S. be required to prepare an Environmental Impact Statement (EIS) for all activities and projects carried out in the bases. These periodic EIS's will estimate the extent of damage in polluted areas which will then be paid for by the U.S. government.

## TAIWAN

### Formosa Plastics Not To Construct Naphtha Cracker in Yilan

OW0303183591 Taipei CNA in English 1601 GMT  
3 Mar 91

[Text] Taipei, March 3 (CNA)—Economic Affairs Minister Vincent Siew [Hsiao Wan-chang] confirmed over the weekend that Formosa Plastics Corporation has already abandoned its plan to construct the Republic of China's sixth naphtha cracker in Yilan county.

Wang Yung-tsai, president of Formosa Group, also told the press that since the plan for the naphtha cracker had been aborted because of the pollution fear of Yilan residents, his company is considering canceling other investment projects scheduled for the eastern Taiwan county.

As the government has already studied and approved the environmental impact of the proposed plant on the Kuanyin Industrial Zone, many people expect it to be chosen by Formosa Plastics. Yunlin and Chiayi are other sites being considered.

Siew had recommended that Formosa Plastics use reclaimed land along the coast of the Kuanyin Industrial Zone because, Wang said, the zone is not wide enough to accommodate the cracking plant.

The minister, however, quickly added that Formosa Plastics itself should take the final decision on the site for the cracker which is expected to cost T \$100 billion (about U.S. \$3.7 billion).



## BULGARIA

### Lack of Radiation Protection System Alleged

AU2602103591 Sofia NARODNA ARMIYA  
in Bulgarian 19 Feb 91 p 3

[Unattributed report: "Bulgaria Has No National Radiation Protection System"]

[Text] On 18 February at the Academy of Sciences Hall, a working conference took place on the problems of national security and protecting the population in cases of radiation and chemical and biological damage under conditions of war, major industrial accidents, and epidemics. The conference was attended by Blagovest Sendov, chairman of the Academy of Sciences, and Major General Stoyan Andreev. Representatives of the various research units of the Military Medical Academy, the Medical Academy, the Agricultural Academy, and many other academies and higher educational establishments and departments took part in the conference.

The three basic national programs, related to protecting the population against radiation and biological and chemical damage were outlined. It became clear that the profound crisis has also affected those priority areas of the scientific units' work that influence our security. Professor Neychev from the Medical Academy said that the attitude toward those spheres is not serious, and that certain labor collectives that work on those spheres will be reduced.

Docent Bosevski, deputy minister of environmental protection, drew perhaps the gravest conclusion: "Almost five years after the Chernobyl accident Bulgaria still does not have a national system of radiation protection. This is a result of a unique departmental chauvinism." He stressed that because of this the "Radioshtit" [Radiation Shield] program has deteriorated and pales in the face of the immediate threat.

Professor Dr. Atanas Kekhayov, Grand National Assembly member, in a statement that contained strong political overtones, said that the negation of war was the best prophylactic. However, he did not explain how such a position would help in the case of, God forbid, a major accident in the Kozloduy Nuclear Plant, or a major industrial plant, or in the case of an epidemic or a nuclear clash in the Persian Gulf.

The conference's goal was to construct a uniform and modern concept of national security that should not be mixed up with the country's defense, which is only a component of this system.

Many proposals were discussed. Finally, Professor Belokonski proposed creating an independent suprapartamental working group that will assess the lessons of the past, as well as the means and the state of the scientific collectives, and then give a green light to national security research. He pointed out that our national security is neither blue, red, nor pink.

### Kozloduy Nuclear Plant Lacks Good Emergency Plans

AU2002153491 Sofia DEMOKRATSIYA in Bulgarian  
14 Feb 91 p 3

[Article by Docent Todor Dimchev: "Ostrich With Its Head in the Sand"]

[Text] The Law on Peaceful Uses of Nuclear Energy is quite definite: "The protection of human life and health and of the environment is a primary concern in the utilization of nuclear energy, and this takes priority over the needs of the national economy and other public needs." These requirements of the law also apply to the plan for dealing with emergencies.

In practice, however, emergency planning in Bulgaria is unsatisfactory, to say the least. Even Engineer Kiril Nikolov, chairman of the Nuclear Energy Industry Economic Trust, declared at the end of last year that "weaknesses in emergency planning" exist.

As for the Kozloduy Nuclear Power Plant's state of readiness to deal with accidents, this is far below what is required. Sufficient stocks of dried milk, canned foods, and iodine drugs have not been prepared. An evacuation plan does exist, but no vehicles have been specially assigned for this work. A warning system has been set up, but there are not enough staff to maintain it. The system is new, but tests do not confirm its reliability. The emergency plan includes no scientifically based prediction or scenario for the development and the phases of possible unforeseen accidents. Without these, it is impossible to draw up a plan for emergency work. No decision has been made either on the emergency plan of the Kozloduy plant or in practice on who is to determine the extent and nature of the unforeseen accident or on the procedure for doing this. Furthermore, no body or organization has been specified to determine the meteorological factors, without which it is impossible to predict the consequences for the population. According to forecasts, a radiation accident in the VVER-400 generating units will develop at lightning speed. Accordingly, unless the duty officer has up-to-date information on meteorological conditions, he will be unable to warn the populated areas that are threatened. This statement was made by qualified specialists in November 1990.

The emergency plan fails to adequately specify the functions and obligations of individual persons and official departments or the links between them. A schedule should be prepared and fulfilled for periodic training at the nuclear power plant, as well as for training according to the plans for protecting staff and the population at large. The state of preparedness for carrying out rescue and emergency repair operations in the threatened oblasts, municipalities, and townships is extremely inadequate.

The legal order requires that an emergency plan be finally prepared and the necessary resources be provided three months before a reactor is refueled. Permission to

load the nuclear fuel may be granted only if a complete check on readiness for emergencies has been completed and a certificate issued to this effect.

Is this requirement of the law being observed in relation to the No. 6 VVER-1000 Generating Unit at the Kozloduy Nuclear Power Plant? The public should be informed! It is intolerable for the interests of certain circles to be placed above those of the members of the public, who are involuntarily subjected to risk. Whose interests lie behind the newly formed Komos and Regena Companies? Members of the Kozloduy provisional administration are asking why the hotel for foreigners is being built by the Regena Company instead of by the Nuclear Energy Economic Trust, and why it is located in the town. Probably, this is the easiest way for money to flow from one pocket into another.

It seems that once again, certain nice people are seeking to make their fortunes. However, does this mean that those who are working on the emergency plan are to be left to the vagaries of fortune?

### Construction of Belene Nuclear Plant Suspended

*AU2202095791 Sofia BTA in English 0858 GMT  
22 Feb 91*

[Text] Sofia, February 22 (BTA)—The construction of the Belene Nuclear Power Plant has been stopped, Prime Minister Dimitur Popov told parliament yesterday in reply to a question. No funds have been allotted for its resumption, either.

Mr. Popov pointed out that the Power Engineering Committee will allocate a sum for the conservation of the project.

### Radiation Problems of Redki Metali Company

#### KNSB Investigates

*91WN0241A Sofia DUMA in Bulgarian 24 Dec 90 p 1*

[Article by DUMA correspondent Stefan Severin: "The KNSB (Confederation of Independent Trade Unions in Bulgaria) Will Originate the First Ecology Trial in the Country"]

[Text] Plovdiv, 23 December—The Confederation of Independent Trade Unions in Bulgaria [KNSB] has specific information concerning the Smolyan Vuzkhod Ore Mining Enterprise. This information is two or three weeks old and dates from the investigation conducted by the Committee on the Utilization of Nuclear Energy for Peaceful Purposes and the Institute on Radiomedicine, Radiobiology, and Radiation Hygiene of the Medical Academy. The radioactive areas in the mine exceed admissible standards by an average of 800-1,000 percent and, in individual areas, by as much as a factor of 124. This situation has been tolerated for years and can be qualified only as a crime bordering on genocide, for which reason the KNSB will instigate the first ecology

trial in the country, declared Dr. Zhelyazko Khristov, KNSB deputy chairman, in today's issue of GLAS, the oblast daily.

According to him, in a single day's work in that mine, a miner would be exposed to as much radioactive radiation as would be tolerable over a 10-year period. This danger was known to the management of the mine and the Redki Metali Company as early as 1958. They alone had this information because it was a secret enterprise.

Khristov specified that the investigation established that the ventilation system at the Vuzkhod Mine had been virtually inoperative for two years. No one bothered to get the full picture of the health of the workers or to take any necessary steps. It was known that 17 Vuzkhod workers had died of lung cancer; within the Redki Metali system, the total was 90. It is unknown how many persons with this fatal disease are in remission.

Khristov announced that complete information will be submitted to the prosecutor's office and the investigation authorities so that all violations and crimes that were committed will be exposed. The KNSB will insist on a complete, independent investigation of the entire Redki Metali Company. If necessary, international expert assistance will be sought. Medical authorities will be asked to determine the true situation concerning the health of the people in the mine and in the entire company. The independent syndicates have already requested the resignations of managers and officials responsible for this situation at the Redki Metali Company.

#### Mortality Rates

*91WN0241B Sofia OTECHESTVEN VESTNIK  
in Bulgarian 4 Jan 91 p 2*

[Article by Petur Dobrev: "Deadly Cover-Up"]

[Text] Fifteen to 20 years ago, when uranium was being extracted at the Redki Metali Mines, located along the southern slopes of Sinite Kamuni, near Sliven, by decision of the then okrug leadership, a Sliven patent was applied for and (unfortunately) granted. The slag that was left after the primary processing of the ore was used as a base in paving some city streets, which were then covered with asphalt. A rather long period of time had to pass before it became clear that this inexpensive gravel released the type of radiation that could cause irreversible damage to thousands of people. At that time, steps were taken to remove part of this deadly lining, which was taken elsewhere, but considerable amounts remained untouched. Investigations conducted by the competent authorities established radiation exceeding admissible Bulgarian standards.

Actually, the entire eastern area of Sliven, where resort cottages have been built, is threatened with radiation. It originates from the ore dumps that can be seen, to this day, at the opening of the tunnels. Ground and surface water leaks from them, which is also contaminated with

radiation. Yet this water is used to water hundreds of vineyards and gardens. The permanent residents of the cottages are exposed to a lethal threat. The calm that prevails here may be due to the fact that the specialists are not united in their assessment of the level of danger of radiation contamination or of radiation safety. A sounding taken in August of last year along Sliven streets established that the rate is within the limits of the standard gamma radiation background, although some specialists believe it is 17 to 20 microroentgens, whereas others assess it at 12 to 17. The head of the Committee for the Peaceful Utilization of Atomic Energy emphasized that radiation around the mines—that is, in the entire eastern cottage area—is two to three times higher than on city streets. The Dosimetric Laboratory of the Redki Metali Company in Bukhovo noted that the water used for irrigation contains 15 percent above-norm uranium and that, under the highway leading to Ichera Village, the radiation level is 200-300 percent higher. The RIOPS [expansion unknown] in Burgas has noted that the soil in that area has a higher content of uranium, ranging between 500 and 900 percent—that is, 70 to 100 becquerels per kg.

In the case of Sliven, the question of significantly higher doses of radiation remains unresolved. Differences in the views of the specialists do not diminish the danger hanging over this city of 1.2 million people. New studies must be made by the competent authorities, using already established international, rather than Bulgarian, standards regarding the limits of admissible rates of uranium radiation. Criminal negligence has been shown by Redki Metali, which abandoned the mines above Sliven in such an open condition, as well as failed to remove the huge dumps, and removed the pipes with running water coming from the uranium mine.

## CZECHOSLOVAKIA

### Czech Prime Minister Notes Environmental Concerns

LD2702132691 Prague Domestic Service in Czech  
1730 GMT 26 Feb 91

[Excerpt] There was a meeting today in Liblice in the Melnik area to discuss the problems of the environment. Among the guests was Czech Prime Minister Petr Pithart, who was interviewed by (Antonin Pecenka):

[Begin recording] [Pecenka] Mr. Prime Minister, you were informed in detail about the ecology situation of the Melnik district. It is not a happy story. What do you think the condition of Melnik will be in the year 2000?

[Pithart] Today the situation is critical. The people who live here must have the possibility of influencing the existence of production. I am thinking of the huge chemical works in the area. It is not possible in the future to come to the government with complaints and requests. The government cannot, and does not want to, deal with these concrete conflicts of interest. On the

other hand, the government must be required to initiate such laws so that the local organs can could enter the interest game [sentence as received]. This concerns millions, since there are large factories. They should be able to make decisions on the basis of their own calculations about whether it is worthwhile for them to have the factory in their territory or their region, and to get large sums of money for it or to move it out by loading it with taxes. Naturally, the other side, the factory, will be thinking in the same way. It will consider whether it is worth paying such huge sums as fines or whether it will deal with it by purchasing foreign progressive technology that is ecologically sound. [end recording] [passage omitted]

### Radioactive Waste Dump Being Prepared in Mochovce

AU0103191791 Bratislava PRAVDA in Slovak  
28 Feb 91 p 2

[CTK report in the "Briefly From Home" column]

[Text] A disposal site for radioactive waste is being prepared in Mochovce and will be part of the nuclear power plant. Low- and intermediate-level radioactive waste from nuclear power plants in Slovakia will be stored in it. The site will not be used for storing spent fuel. Waste to be stored in the site will be reinforced beforehand—it will be poured with concrete into 200-liter barrels. These will then be placed in concrete cells measuring 6 by 15 meters. It is important to ensure that the waste is isolated from the surrounding environment for at least 300 years. Clay sealing roughly 1 to four meters from the bottom and the sides will fulfill these conditions.

## POLAND

### Japan To Help Nation Stem Fossil Fuel Pollution

OW2\*02103591 Tokyo KYODO in English 1009 GMT  
25 Feb 91

[Text] Tokyo, Feb. 25 KYODO—Electric Power Development Co. said Monday it will provide technical assistance to help Poland stem the pollution created by its coal-operated thermal power stations.

The firm was commissioned by the Japan International Cooperation Agency (JICA) to assist Poland in combating its pollution problems as part of Japan's Official Development Aid (ODA).

It will mark the first time that Electric Power Development, jointly owned by the government and nine electric power utilities, has helped the East European nation fight environmental degradation.

The target of the operation will be the 10 generators at the Kozienice Power Station with a combined capacity of 2.6 million kilowatts.



The station is located 75 kilometers south of Warsaw.

Poland lacks sufficient pollution-control technology, including desulfurization techniques.

The fact that 84 percent of Poland's power generation facilities depend on coal has also greatly aggravated its pollution-control problem, leading to such environmental hazards as acid rain.

The amount of sulfur oxides emitted by the Kozienice plant is relatively small. Since the plant is situated in an area where restrictions are tight, however, it must serve as models for the nation's other thermal power facilities.

Electric Power Development will send technicians to survey the conditions at the plant and later draw up pollution-control plans, including desulfurization techniques, the company said.

## REGIONAL AFFAIRS

### Uruguayan Official Cites Brazilian Power Plant as Pollution Source

PY2002173291 Madrid EFE in Spanish 0014 GMT  
20 Feb 91

[Text] Sao Paulo (Brazil), 19 Feb (EFE)—Felix Pittier, director of boundary, maritime, and border affairs of the Uruguayan Foreign Ministry, today warned of the effects of the so-called acid rain on the border between Uruguay and Brazil. This rain is caused by the Candiota Thermoelectric Plant in Rio Grande do Sul State.

Pittier reported that the atmosphere and the water are seriously polluted in Uruguayan towns located on the border with Brazil. This pollution has damaged the forest and the cattle and has caused mutant albino birds to be hatched.

Pittier said that he has already contacted Brazilian authorities and that the two governments have decided to investigate the affected area through the analysis of metallic waste which is affecting the fauna and flora.

The coal-fired Candiota Thermoelectric Plant is 50 km from the border with Uruguay. The plant generates 446 megawatts per year, and its output may be increased to 2,100 megawatts in the next few years.

One of the biggest Brazilian coal mines is located in the Candiota region. Its reserves total 12 million tons, 25 percent of which is being exploited from open pits.

Pittier and representatives of 13 other South American countries are in Sao Paulo to attend a seminar on "Environment Prospects for the 1990's: Evaluation of the Environmental Impact in Latin America."

## BRAZIL

### President Collor Launches Forestry Program

PY1502230091 Brasilia Domestic Service in Portuguese  
2100 GMT 14 Feb 91

[Text] President Fernando Collor today visited the cities of Imperatriz and Acailandia, in Maranhao State. He signed a document creating Forest Centers Program in Eastern Amazonia.

President Collor launched the program in Imperatriz by creating a private foundation that will promote and implement projects for the preservation, recovery, and use of national resources. President Collor also signed a message for the National Congress requesting authorization to allow the Vale do Rio Doce Company to participate in a forest project called Maranhao Cellulose. The idea is to create more than 3,000 direct jobs and more than 6,000 indirect jobs over 10 years and recover more than 12,000 hectares of deforested land. The overall program will affect more than 250,000 hectares of land, an area larger than countries like England and Portugal. [sentence as heard]

President Collor also went to the city of Acailandia, where he was greeted by nearly 7,000 people. In his speech, the president promised the installation of a drinking water supply system; an old demand of Acailandia inhabitants. Collor thanked former Governor Joao Castelo for his support at the beginning of his presidential campaign, and Collor called all the political leaders, mentioning Governor-elect Edson Lobao and PFL [Liberal Front Party] Senator Alexandre Costa, to help—together with the rest of society—the country overcome the crisis by defeating the inflation which, according to the president, is a plague and a pest with which Brazil can no longer coexist.

### Fire Destroying Important Ecological Reserve

PY2702181291 Brasilia Domestic Service in Portuguese  
2200 GMT 26 Feb 91

[Text] A fire is destroying Itapua Park in Rio Grande do Sul State. This park is one of the state's main ecological and historical reserves. The fire began at dawn today.

This is the third fire in two months and the second in one week. The park comprises 3,800 hectares and is barely 45 km from Porto Alegre. Besides the park's endangered flora and fauna, it contains a fortress that was built during the Farrapos [members of the Rio Grande do Sul Republican Party in 1835] War, and three vessels were sunk in its Black Lagoon.

(Paulo Staigleter), Renewable Resources Department director, said the fire was caused by criminals in view of the fact that several threats have been received since the announcement that the park will be closed to tourism.

IBAMA [Brazilian Institute for Environmental Affairs and Renewable Natural Resources] forest rangers and a military brigade are at the park. They are still trying to put out the fire, which is difficult due to the drought and intense heat.

## REGIONAL AFFAIRS

**Oil Slick Heads South, Saudi Cleanup Measures Prepared***LD1302165491 Riyadh SPA in English 1229 GMT  
13 Feb 91*

[Text] Dhahran, Feb 13 (SPA)—The oil pollution center has announced that the oil slick in the waters of the Arab Gulf has headed southwards.

In a press statement, Dr. Nizar Ibrahim Tawfiq, the national coordinator for combatting oil spill, said arrangements have been taken to pinpoint the oil spill moving towards Abu Ali Bay.

An increase in the oil spill was noticed in Manifa Bay and sensitive environmental regions, he said.

Dr. Tawfiq noted that arrangements have been made to operate air flights to Greece and Netherlands to transport equipment for combatting oil spill.

Saudi Aramco will organize Wednesday a training course of operations of oil sweepers and installation of rubber barriers at the desalination plant in Safaniah, he said.

Dr. Tawfiq stressed that protection measures around Manifa Bay were still in progress to ward off harm with regard the desalination plant in Jubail and the power station in Ghuzlan.

Arrangements are also underway to protect the desalination plant in Rasal-Zour, he added.

Specialists working at the National Commission for Wildlife Preservation and Development said a number of cormorants and other birds were found lifeless at the shore of Tanajeeb region.

On the other hand, the rescue centers in Jubail and Tanajeeb have made the required arrangements for treatment of the birds affected by the oil spill.

**Saudi Official Reports on Action To Tackle Oil Spill***LD1902145191 Riyadh SPA in English 1222 GMT  
19 Feb 91*

[Text] Riyadh, Feb 19, SPA—President of the Royal Commission for Jubayyil and Yanbu ruled out the possibility of industrial accidents as a result of military operations launched by the coalition forces for liberating Kuwait.

Prince 'Abdallah ibn Faysal ibn Turki said [that when] Saddam Husayn failed to penetrate the kingdom's air defences, he resorted to attacks on major cities with Scud missiles.

Prince 'Abdallah, speaking to reporters during a luncheon he hosted here yesterday in honor of Saudi friendship delegations which visited a number of Islamic, Arab

and friendly countries, said the commission has taken great precautions for averting any industrial accidents.

Asked whether the current oil spill in the Gulf will affect the kingdom's industrial installations, the commission's president said measures have been taken to protect these installations.

"We should not underestimate the hazard of this spill because its threat to installations will continue for months and to marine life for years," Prince 'Abdallah added.

Prince 'Abdallah highlighted the methods which have been adopted for combating the spill when it reaches the vital industrial installations.

He said the commission has rallied the assistance and know-how of international experts for fighting the spill which will affect all Arab Gulf and countries overlooking the Arabian Gulf.

On the other hand, efforts are on full swing to rescue birds and marine life which is facing the danger of the spill which was caused by the dumping of millions of barrels of crude oil into the Arabian Gulf waters by the Iraqi aggressor.

The commission, in collaboration with Saudi ARAMCO, marine life rescue scheme in Jubayyil, and volunteers, are making unceasing efforts to rescue birds, sea turtles and other endangered species which have been affected by the spill.

**Soviet Experts Say Remedy Could Clear Gulf Slick in 'Two to Three Months'***PM2202131991 Moscow Central Television First  
Program Network in Russian 1800 GMT 19 Feb 91*

[From the "Vremya" newscast: Report by A. Shvetsov, V. Zavyalov, identified by caption]

[Text] [Announcer] About a week ago we reported that scientists in Tyumen had discovered an effective means to eliminate the vast oil slicks in the Persian Gulf. This information has spread throughout the world and evoked great interest. I have a cable here signed by Sofinskiy, our ambassador to Burundi, where he writes that the reportage from Tyumen has attracted interest among many major companies and individual businessmen. They are turning to the embassy for the address and other details of the scientific institute in question. We will comply with this request. And so, more on the same topic.

[Shvetsov] The West Siberian Geological Oil Prospecting Institute in Tyumen is a major scientific research center today. Its specialists are working on a very wide range of problems, connected mainly with oil and gas deposit prospecting. However, of late the Tyumen scientists have been devoting more and more attention to complex and difficult ecological issues. And there have been important achievements in this sphere.

[I.I. Nesterov, director of the institute, corresponding member of the USSR Academy of Sciences, identified by caption] We have a stock of several tonnes of this preparation. [video shows label reading "Putidoil" in Russian and English, "Bacterial preparation for oil-polluted water and soil recovery"] The requirement per hectare, or per [unit indistinct] to be more precise, is approximately 1 kg of this preparation. We could set up special installations on the shores of the Persian Gulf and produce it on the spot. In that case it would be possible within two to three months, in my opinion, to essentially completely eliminate the whole oil slick.

The preparation not only "eats up" the oil, that is the oil film, it also destroys all the oil which is polluting the water. This is of particular importance for the biomass, for fish, for example. When all the oil has been destroyed, the quantity of this biological preparation becomes equal to that of the natural background. That is to say, it is present everywhere. What we are doing is merely somewhat increasing its concentration. When all the oil is destroyed, it turns into protein. The protein is additional biomass on which fish feed.

We are prepared to carry out an experiment on a special plot which is to be provided.

[Shvetsov] The confidence of the creators of this preparation for combating oil pollution is based on many years of tests which have proved its efficacy. Recently the preparation was used to clean up aircraft fuel on an extensive area at the site of an air crash in Czechoslovakia. The operation took literally 2 days.

Unfortunately, the Tyumen institute cannot meet the constantly growing demand for this preparation with its own resources. A large specialized enterprise is needed. Perhaps the international interest in what the scientists have to offer will help in some way to resolve this problem actually in our country.

[Announcer] Here is the address for organizations and companies which are interested in the Tyumen scientists' method:

[caption reads: "625670 Tyumen, Volodarskiy Street No. 56, ZapsibNIGNI, Tel. 26-20-66, Telefax 24-29-86"]

### **Saudi Operations To Combat Gulf Oil Slick Continue**

*LD2702095591 Riyadh SPA in Arabic 0150 GMT  
27 Feb 91*

[Text] Dhahran, 26 Feb [date as received] (SPA)—The center for combatting oil pollution states that today's air survey included the area extending from Dammam to Safaniyah.

A press statement released by the center today points out that no further areas on the Saudi coast have been affected by oil today due to southeasterly winds which are currently dominating the Gulf region. The statement

adds that a large slick of light oil one kilometer long and half a kilometer wide was observed today 20 km east of Safaniyah. It says that pollution is still grave in the Tanajib area, and that large slicks have been observed 30 km east of Tanajib. The situation remains the same as yesterday in Hanifah and Ra's Bulbul regions.

The statement says that combatting teams have drawn off 1,500 barrels of oil and water mix in Ra's al-Zur region and another 1,500 barrels in a lake close to the region. Meanwhile special equipment was used for many hours to remove an average of 600 barrels per hour. It adds that additional equipment has arrived in Abu 'Ali region and it will be used tomorrow in the combatting operation.

Saudi ARAMCO has achieved a record in gathering oil. It has gathered 10,200 barrels per day. Thus, the total quantity drawn off by ARAMCO has reached 115,000 barrels.

King Fahd University of Petroleum and Minerals, together with the National Body for the Protection and Development of Nature and a consultant from the United States, have begun a project to cleanse the Saudi coastline from oil pollution. The university has carried out coastal surveys in Dawha al-Maslamiyah to draw up a plan to cleanse the region affected by oil.

### **USSR Ready To Help Remove Gulf Oil Slick**

*LD2802152791 Moscow TASS in English 1504 GMT  
28 Feb 91*

[By TASS correspondent Andrey Surzhanskiy]

[Text] Moscow February 28 TASS—The Soviet Union is ready to help remove the oil slick in the Persian Gulf, Sergey Antonov, a spokesman for the Soviet Ministry of Merchant Marine, told TASS today.

According to Antonov, the Saudi Government approached the Soviet Union with the request to help on a contract basis. A Soviet expedition, comprising two specially equipped multi-purpose ships, an oil-collecting tanker and 25 specialists in oceanology, ornithology and ecology, is prepared to leave for the Gulf immediately.

The record-high pollution of the sea called for creating an international emergency centre to help Saudi Arabia, the country that was the worst hit by the ecological disaster.

The centre is now operating within the framework of the International Marine Organisation, of which the Soviet Union is a member.

Since the centre was established, groups of specialists and relevant hardware have been sent to the Gulf from the United States, Great Britain, Germany, Canada, Norway, and Japan. Italy, the Netherlands, Sweden, Belgium, France, Denmark, Finland, and Australia have expressed readiness to help.

According to International Marine Organisation specialists, from one to two million barrels of oil products were dumped into the Gulf. Experts believe the cleanup will be very complicated: the forthcoming season of sand storms is one of many complicating factors.

#### **Kuwaiti Oil Well Fires Expected To Destroy Forests**

*OW2802121591 Tokyo KYODO in English 0900 GMT 28 Feb 91*

[Text] Tokyo, Feb. 28 KYODO—About 60 percent of forests in the Persian Gulf region will be damaged if fires at Kuwaiti oil wells continue for a year, a Japanese research institute said Thursday.

The Global Industrial and Social Progress Research Institute said that, if more than half the oil wells burned for a year, emissions of so-called "greenhouse" gases would be more than three times as much as those produced in Japan in one year.

Such emissions of greenhouse gases, blamed by scientists for trapping heat in the atmosphere, would cause acid rain that could destroy some 20 percent of forests in seven Gulf nations and damage another 20 percent seriously, the institute said.

The seven countries include Iraq, whose troops had reportedly set alight some 500 wells in Kuwait, blackening the skies and filling the air with the stench of burning petroleum.

The institute said Japan should consider aid not only for restoration of oil facilities in Kuwait, but also for protection of the environment, when it works out reconstruction measures for the Middle East.

#### **Oil, Smoke, Greasy Rain Pollute Iranian Sea, Air**

*LD1902205691 Tehran IRNA in English 1746 GMT 19 Feb 91*

[Text] Tehran, Feb. 19, IRNA—Leakage from oil wells set afire by the warring sides in the Persian Gulf has had adverse effects on environment and marine life in the region.

From Borazjan near the Persian Gulf port city of Bushehr there were reports of food poisoning as a result of people eating fish recently caught in Persian Gulf waters. Many complained that the fish smelled of oil. In related reports reaching here from Bandar Lengeh near the Strait of Hormuz further east, a cloud of thick smoke has blanketed the coastal town and that the smoke is [as received] moving to other areas in southern Iran. Meanwhile, many places in western Iran bordering Iraq, particularly the town of Qasr-e-Shirin, are threatened by air pollution as a result of the non-stop U.S.-led bombardment of Iraqi oil installations across the border. Black, greasy rains have fallen in some towns since the start of the Persian Gulf war between Iraq and the U.S.-led forces on January 17.

#### **Black Rain in Iran Blamed on Oil Well Fires**

*91WN0254A Tehran KAYHAN INTERNATIONAL in English 24 Jan 91 p 1*

[Text] Bushehr, 23 Jan (IRNA [Islamic Republic News Agency])—Black rain poured for ten minutes in this southern Iranian province Tuesday afternoon.

The black rain, which came after three days of constant rainfall was also greasy.

According to environment specialists here, the rain was black and greasy because of the fire in the Kuwaiti oil wells and other areas in the Persian Gulf region.

#### **Thick, Black Smoke Covers Ilam, Khuzestan Provinces in Iran**

*LD2502114191 Tehran Domestic Service in Persian 1030 GMT 25 Feb 91*

[Text] Smoke rising from bombardments and burning of Kuwaiti oil wells and installations has covered part of Iran's skies in the Khuzestan region. According to IRNA's reporter, the black smoke which plunged the towns of Khorramshahr and Susangerd into darkness yesterday, could again be seen this morning in the towns of Susangerd and Ahvaz, but the thickness is somewhat reduced.

Another report from Ilam states that thick black smoke has covered the towns of Ilam Province since this morning. This mass of thick smoke, which is moving from southern Ilam Province and is spreading toward the north, has covered a large part of the province's skies since an hour ago. The sun's rays cannot penetrate it. According to the report, this morning the smoke mass also covered the skies over the towns of Ilam, Salehabad, Mehran, Dehloran 'Ivan, and Chowar.

#### **'Black Rain' Falls in Iran's Bushehr Province, Other Areas**

*LD2702111991 Tehran IRNA in English 1109 GMT 27 Feb 91*

[Text] Ganaveh, Bushehr Prov., Feb. 27, IRNA—Black rain poured in Ganaveh and Bushehr from 07:30 GMT Wednesday morning till 08:30 GMT, the time the report was dispatched.

In the recent days most of the rainfall in the region has been black and greasy because of the explosion of Kuwaiti oil wells in the course of the Persian Gulf war. In Bushehr alone black rain has fallen five times. Meanwhile, the heavy smoke over the Khuzestan provincial capital of Ahvaz started moving away by Wednesday noon. However, the weather is cloudy in Khuzestan Province and black rain is still pouring.

Despite reduction of air pollution, the odor of burning oil substances has filled the air, causing problems for those suffering from lung and heart diseases.



The Ahvaz Meteorological Department forecasts that the weather will be cloudy and rainy during the next 48 hours in Khuzestan Province.

### **Black Rain Causes Panic in Turkey**

TA2702171091 Ankara ANATOLIA in English  
1615 GMT 27 Feb 91

[Text] Adana (A.A)—Black rain, which fell for more than 10 hours in southern Turkey on Monday caused no apparent damage to health or the environment, officials said on Tuesday.

The rain initially caused panic among local residents who feared it was caused by burning oil installations in Kuwait.

In a press meeting in Adana, Governor Recep Birsin Ozen said scientific studies showed there was no danger at present but investigations were continuing.

Scientists from the chemistry department and environmental research center at Adana's Cukurova University are presently carrying out observations.

Governor Ozen said they had found 39 mg of sulphur dioxide and 45 mg of smoke per cubic meter in the air in the province but that this was less than one fourth the short-term danger limit.

However, he advised citizens not to use rain water and to wash vegetables and fruit thoroughly. Samples were also sent to Ankara for tests, he said. The black rain fell in southern Adana, Hatay, and Sanliurfa provinces for a period of around 10 hours, staining the hands and faces of people caught outside and turning their clothes black.

### **Soviet Roundtable on Gulf War Ecology Damage**

PM1402115791 Moscow PRAVDA in Russian  
11 Feb 91 Second Edition p 7

[A. Pokrovskiy, R. Fedorov report on undated roundtable discussion including contribution from M. Kokeyev, deputy chief of a USSR Foreign Ministry administration: "Address of Disaster—Persian Gulf"]

[Excerpts] Soviet academics and specialists are warning that the ecological tragedy will affect the whole planet and that it will take mankind many years to eliminate the consequences of this war.

Academics and specialists concerned with ecological problems gathered for a roundtable at the Soviet Committee for the Defense of Peace. The conclusion was unanimous: Every effort must be made to eliminate the dangerous seat of war in the Persian Gulf as quickly as possible. The roundtable at the Soviet Committee for the Defense of Peace was organized on the initiative of PRAVDA and a number of scientific research institutes and organizations. An organizing committee was formed to stage an all-union conference. N.I. Vorontsov was elected its chairman.

The roundtable was conducted by V. Gubarev, PRAVDA science department editor, and V. Kuznetsov, first deputy chairman of the Soviet Committee for the Defense of Peace. [passage omitted].

[M. Kokeyev, deputy chief of a Foreign Ministry administration] I fully share the opinion of the participants in today's meeting who have stressed that what is occurring in the Persian Gulf directly and immediately affects our country's interests and is not solely confined to the limits of the region. If we are talking about the sum total of environmentally damaging factors in the Persian Gulf conflict, then it is already the biggest marine ecological disaster in human history, which could become an even bigger disaster if military operations escalate and mass destruction weapons are used.

The foreign policy aspects of the Persian Gulf conflict's ecological consequences stand out quite clearly even now and require efforts from the whole international community and the utilization of all UN resources to organize ecological collaboration between states. I also think that, if it does emerge that the oil was discharged deliberately, then we can talk about actions which constitute a crime against nature and against humanity, which is a component part of it.

I specifically mentioned a crime against nature here because the future codification of crimes against humanity will probably include this item. I recall that the 1977 convention, to which Iraq is a signatory, quite specifically prohibits military or any other effects on the environment. There is also the international convention on preventing sea pollution by waste discharges and other materials. It specifically says that the Persian Gulf is a particularly delicate region in the ecological respect.

The ecological crisis in the Persian Gulf, like the conflict as a whole, must of course be resolved above all by political means. And mankind has them at its disposal. In particular this means international cooperation, which is already starting to develop in connection with the ecological consequences of the Persian Gulf conflict.

Lately one hears statements that we are proceeding slowly and devoting little attention to the preventive side of the matter. I want to recall that we once submitted a proposal on setting up a Center for Emergency Ecological Aid. Had it been operating already, the aid could have been more expeditious. At any rate, it would have been possible to get an instant expert assessment of the situation from the most authoritative specialists. Which would have made it possible to determine the optimal line of action in the light of all aspects of the conflict.

It was proposed that a number of other measures should also be taken which would assist the organization of international environmental protection cooperation. In particular, to work out expeditiously a state code of ecological behavior. Incidentally, this question was first raised several years ago in the Warsaw Pact Political Consultative Committee. It has not lost its topicality to this day. Moreover, it is acquiring ever-greater practical

significance, notably in connection with the approach of the 1992 UN conference on the environment and development.

In a word, this was a step in the right direction. And I would like to express my own personal opinion that we should certainly continue such steps, under the auspices of both the Warsaw Pact and CEMA's legal successor. After all, in NATO, for example, there is a deputy commander for science and technology, including ecology. And when we talk about a reorientation of military organizational development on the principles of defense sufficiency, we should probably bear in mind that environmental protection cooperation must be developed very intensively as a new element of collaboration in all our existing structures. [Kokeyev ends].

The roundtable participants came to the unanimous conclusion that USSR academics and specialists must meet at a conference in order to discuss in detail all aspects of the ecological disaster in the Persian Gulf and plan a way of combating its consequences.

The conference organizing committee appealed to UN Secretary General Perez de Cuellar and the representatives of the UN Security Council permanent members. The letter, in particular, says:

"The events of recent weeks in the Persian Gulf region have shown that modern weapons have terrible destructive force not only in relation to man but also his living environment. These weapons are capable not just of disturbing ecological processes but also of involving nature in destructive actions, creating special forms of ecological disaster. Oil discharged into the sea, gas towers set alight, bombed-out chemical and bacteriological weapons plants and laboratories, destroyed nuclear facilities—these are all becoming lethal ecological weapons that are widely distributed and long-lasting...

"It follows from this that it is vitally necessary to adopt a UN and Security Council emergency appeal to the governments of countries involved in the conflict in the Persian Gulf region containing a demand to limit the use of weapons, specifically to stop the use of weapons when large-scale negative ecological consequences are entailed; not to allow the use of mass destruction weapons, including chemical and nuclear weapons; and also to urgently work out and define the status of 'ecological weapons' and to open for signing a world convention on prohibiting their use."

## INDIA

### Parliament Panel To Study Pollution Control

91WD0434A Bombay THE TIMES OF INDIA  
in English 18 Jan 91 p 5

[Text] Bombay, January 17—The parliamentary committee on environment and forests, which has been constituted for the first time, will examine in depth the

working of the ministry concerned as well as various selected topics covering social forestry, wildlife management and related matters.

The committee chairperson, Mr. Samarendra Kundu, who along with eight members is in the city to visit Chembur and other areas, told reporters today that the committee was not an appendage of the government.

The other subjects it had selected are pollution control, wastelands development board, depletion of the ozone layer, global warming, depletion of the Himalayan forests and conservation, he said.

He said the committee would make an effort to bring individual and social organisations and the government together to solve issues. There was a need to involve people in creating awareness, he stressed.

Referring to the ongoing Narmada agitation, he admitted the government was not prepared to listen to the people. When asked whether the committee would review the clearance the ministry had granted to the Sardar Sarovar Project or any related aspects, he said suo moto the committee could not do anything.

Regarding the environmental policy, he said the draft should be circulated widely.

Mr. Vidhyadhar Gokhale, MP, and Mr. Ram Kapse, MP, presented various problems of pollution in the Thane-Belapur belt and said the committee should look into the various issues in the area. The environment and human life protection committee gave a memorandum to Mr. Kundu calling for review of permission granted to NOCIL for setting up an industry in the already congested area of New Bombay.

Water was being diverted to industries while people, living in the area had no supply, the memorandum said. The Thane-Belapur belt and the Chembur area were becoming hazardous because of the unwarranted expansion of industries, it said.

Industries like Oswal were expanding their units, which virtually meant setting up new ones, and this must be checked. There were a number of industrial accidents that drew attention to the lack of safety precautions in the industries, it added.

Mr. Kundu assured them that he would look into the matter and call environmental groups for discussions if necessary.

The 22-member committee was appointed in August last year for a period of one year.

## IRAQ

### Soviet Official Assesses Iraq's Potential Radiation Damage

91UF0500A Moscow *RABOCHAYA TRIBUNA*  
in Russian 16 Feb 91 p 3

[Report on interview with Ye. Ryazantsev, director of the Department of Research Reactors and Reactor Technologies of the Nuclear Energy Institute imeni Kurchatov, by Vladimir Lagovskiy; place and date not given: "A 'Chernobyl' in the Vicinity of Baghdad? Soviet Specialists Rule This Scenario Out"]

[Text] **Alarming news was found in the very first reports on the bombing of Iraq: A nuclear center in the vicinity of Baghdad was destroyed. What kind of threat do the consequences pose? Will an ecological tragedy resembling Chernobyl occur?**

Ye. Ryazantsev, director of the Department of Research Reactors and Reactor Technologies of the Nuclear Energy Institute imeni Kurchatov said: We should not worry about this. The equipment at the nuclear center is well known. Even if you wanted to, you would not be able to cause what took place at the Chernobyl Nuclear Power Station. The design and physical peculiarities rule this out.

Therefore, as of the time of the bomb strike, there were three pool-type reactors at the nuclear center: an IRT-5000 with a capacity of five megawatts built on a Soviet design, started up and tuned up by specialists from the Institute of Nuclear Physics imeni Kurchatov, an OSIRIS with a capacity of 35 megawatts, and TAMIZ-2 with a capacity of 500 kilowatts. They were built on a French design.

The nuclear center is situated 25 kilometers southeast of Baghdad. Iran is nearby, and the USSR is slightly further away.

What did the bomb attack destroy? Alas, there are no specific data on the nature of the destruction; at least, the specialists of the Nuclear Energy Institute imeni Kurchatov do not have any. This is why it is premature to assert anything at present.

Three scenarios of events are possible. In the first scenario, the reactors were shut down and fuel was removed. In this case, radioactive contamination is ruled out. In the second scenario, reactors were shut down but fuel was not unloaded. An explosion may scatter it over the compound of this facility. This is not as frightening as it appears at first sight: Contamination would be of local extent, and merely a small segment of volatile fission fragments would end up in the atmosphere.

The third scenario is the most dangerous. At the time of the strike, the reactors could have been in operation at nominal capacity. A direct hit, which is possible given today's technology, would have smashed the vessels.

Within several minutes all the water would have drained from the pool. Nuclear fuel, a mixture of uranium-235 and aluminum, would have become hot and oozed to the bottom of the pool. A radioactive "cake" would have been formed. As it cooled, it would have emitted almost all fission fragments present into the atmosphere. The fragments consist mainly of iodine-131. When they are inhaled into an organism through the air, they affect the thyroid gland.

Specialists calculated the scope of radioactive contamination based on the design of the reactors, the weight of fuel, and the approximate height of the emergency discharge. Within three kilometers of the reactor, the dose of thyroid gland exposure could reach 60 rem, and within 10 kilometers, four rem. Baghdad is threatened with 0.3 rem. This is not much. For example: Exposure due to the natural background is only 1.5 times less. In other words, the danger is minimal even if the outcome is the worst. According to USSR norms, only children need to be evacuated from the three kilometer zone. Eight or 10 kilometers away, protective measures are not necessary at all.

Briefly about politics. Why was there any need at all to take risks and bomb the nuclear center?

Ye. Ryazantsev said: "It was reported in passing that the strike was aimed at preventing the production of nuclear weapons in Iraq."

[Lagovskiy] Was this a realistic threat?

[Ryazantsev] I do not think so. The nuclear center had only so-called research reactors. They were built for work on the physics of solids and for manufacturing isotopes and medical preparations. In principle it is possible to manufacture plutonium for nuclear bombs in these facilities, if uranium-238 is somehow located inside.

[Lagovskiy] How long has the Soviet reactor been in operation in Iraq?

[Ryazantsev] About 15 years. However, this does not amount to anything yet. The center was inspected on an annual basis by an IAEA [International Atomic Energy Agency] commission. These procedures were established within the framework of the treaty on the nonproliferation of nuclear weapons. It is incredibly difficult to conceal perfidious designs from the commission. It checks literally everything, from reactors to fuel stocks. Iraq has never been cited by the IAEA. Therefore, by targeting the nuclear center, the United States also hit the prestige of the international organization.

[Lagovskiy] Apparently, inspections are not to be expected in wartime. Could it be that the United States resolved to get some insurance for the future?

[Ryazantsev] I will repeat that materials for the bomb cannot be generated rapidly.



[Lagovskiy] Nonetheless, persistent rumors circulate to the effect that Iraq has nuclear weapons. Could they be manufactured outside the nuclear center?

[Ryazantsev] Any answer to this question will be hypothetical only. In theory, we may conceive of some underground plant, as well as Husayn's specialists endeavoring to manufacture a bomb with uranium rather than plutonium. The USSR, as well as other countries, delivered uranium enriched up to 80 percent to Iraq. If it were remelted it would suffice for one or two bombs. However, once again the issue arises of how to circumvent the IAEA, which controls deliveries and consumption of nuclear fuel. Still, if we assume that a secret plant exists, why bomb the nuclear center?

## ISRAEL

### Upgraded Oversight of Plant Safety, Pollution Health Dangers Urged

91WN0206A Tel Aviv HA'ARETZ in Hebrew 17 Dec 90 p 2B

[Article by Yosi Melman]

[Text] People from the criminal investigation unit of the Israeli police are now investigating reports of sanitation negligence in the Tadiran battery plant in 'Eqron. An investigation was opened under the supervision of State Prosecutor Dorit Beynesh following a complaint by Mapam MK Ya'ir Tzeven and, up till now, has not been made public. In his complaint Tzeven demanded an investigation into whether the plant's managers, Labor Ministry inspectors and doctors from Kupat Holim's Department of Occupational Medicine had been negligent in their duty and whether, as a result thereof, crimes had been committed such as the removal of employee medical records.

About a half year ago Tzeven warned of "serious shortcomings by Tadiran's management in protecting the health of many workers at the plant." According to him, a document had been submitted to the management ten years ago warning of the exposure of workers to toxic substances. But only a year and a half ago safety devices were installed at the plant at an investment of a million dollars. Dozens of plant workers claim—and the company denies—that during their years of work they came into contact with and were exposed to materials that are dangerous and harmful to their health, including thionyl chloride and nickel cadmium.

Many workers are now undergoing a series of medical tests in Tel Shomer Hospital to determine if their health has been affected. Against this background, insurance companies have also begun an investigation, since they would have to bear the burden of compensation if such a decision were to be made.

This is the first time that the State Prosecutor and the Israeli police have concluded that public interest

demands they investigate an issue affecting the quality of the environment in general and possible damage to the health of workers in an industrial plant.

The precedent of a police check is focusing attention on the sad situation of the quality of the environment in Israel resulting from negligence on the part of industrial plants, as is described in conversations with experts, doctors and community and economic people: the water we drink is polluted, the air we breathe is poisoned, the land that produces our food is saturated with toxic chemicals, the food that goes into our mouths is contaminated and workers at the work place are exposed to radiation and hazardous materials.

Even though government representatives in charge of safety issues and the protection of environmental quality dissociate themselves from or reject outright some of the charges, they agree that "there are serious problems" in protecting environmental quality in Israel, as Dr. Shmuel Brenner, second in command at the Bureau of Environmental Quality, defined it. Brenner even agrees with the assertion of 'Efra'im Kahalon, chief labor inspector in the Ministry of Labor and Welfare, (who is now up for retirement), that Israel lags behind the industrialized nations of the Western world in the standards set in most of these areas.

Brenner, an epidemiologist by training and director of the Institute for the Investigation of Environmental Quality, stresses that we have to rank the dangers and the damage. In his opinion, the pollution of the aquifers because of the seepage of toxic substances, especially chemicals and fertilizers, and the problem of the turpidity of aquifers and the breakdown of the garbage system throughout Israel—except for Gush Dan and Haifa—are of more concern and more serious than air pollution. A greater danger to the health of the inhabitants and the quality of the environment in Israel—as government representatives and independent experts in research institutes agree—is the potential for chemical disaster. These are accidents caused by neglect in plants that use hazardous or toxic materials. Within the confines of the plant there is danger to the health of workers who come into contact with or are exposed to hazardous materials, and outside its walls, there is danger to the environment and to the population residing nearby.

In fact, every year hardly a month passes without registering at least one work accident traceable to a safety defect and which only by a miracle does not end up in mass disaster. Environmental quality experts feel that many defects, especially in small plants, generally never come to the attention of the authorities, much less the general public. The large industrial plants try harder to oversee their practices and to invest in preventive equipment and advanced tools.

### The Distance From Population Centers

The disaster in the city of Bhopal, India is the big nightmare that causes sleepless nights for anyone involved in plant safety. In 1984 there was an enormous

explosion in the chemical plant there, owned by an American company. Poisonous gases released in the explosion caused the deaths of thousands of people living nearby. Could a similar tragedy occur in Israel?

In 1985 the Ministry of Health put together a document called "Location of Industries in Israel," that catalogued the plants in Israel into seven groups and recommended that they be located a minimal distance from dwellings. In the first group were plants producing chemicals, oil, leather goods, food, drinks, tobacco, etc, which constitute a danger to public order. The document recommends that they be set up at a minimum distance of two km from populated areas. The State Controller recommended that the document, which served as a guide for the Ministry of Health, be made into law. That never happened because of the opposition of industrialists and government ministries responsible for encouraging investments in the economy and in industry, since such a decision would have raised the cost of setting up an industrial plant and removing it from Israel's ports and foci of technological and scientific infrastructure.

Sha'ul ben Shamhar, chairman of the Histadrut's safety department, deemed a mass tragedy likely should an accident occur in two plants in the center of the country. In Tzeven's opinion, to those two should be added the Protarum plant near Acre. Tzeven, who heads the subcommittee on labor safety of the Knesset's Labor and Welfare committee, explicitly warned that a serious accident at that plant could cause a "mass disaster a la Bhopal."

In the past, whenever the government provided monetary assistance to Protarum, Tzeven demanded that it be conditioned on moving the plant to an isolated spot removed from places of habitation, but he was always in the minority in the Knesset. A confidential report from 1985, the very existence of which has not been previously published, evaluated the hazards from the plant. It asserts that in the event of a serious malfunction, poisonous gases, especially chlorine, could be released that could reach Acre or adjacent population centers and injure hundreds or thousands of people. The report stresses that the danger results from the proximity of the plant to Acre and its daughter communities, and not from negligent management or not taking appropriate precautions or safety measures. Plant manager Dov Grossman said in response that, "our concern is first and foremost for our workers and for ecology." According to him, since the establishment of the plant in 1952, numerous improvements have been installed—in control, monitoring, protection and emergency systems—to prevent a chemical disaster. He added that moving Protarum to another location would cost hundreds of millions of dollars and "is not even being considered."

### 3,000 Registered Hazardous Materials

Together with Protarum a whole series of plants are located adjacent to population centers, which threaten the environment: 'Agan in 'Ashdod, Makhteshim in

Beersheba, Rotem, Deshanim and Tirkovot, all in the Negev, petrochemical and distillation plants in Haifa, etc. According to Histadrut and government registries, there are about a thousand plants that use hazardous or toxic materials. The Ministry of Health is aware of the existence of 3,000 such materials and is responsible for their registry and the granting of permits. That allows a certain amount of supervision over the entry of the materials, most of which are imported, and over the tracking of others, until they arrive within the confines of the ordering plant. But, according to Jacques 'Amar, Director of the Safety and Hygiene Department of Histadrut, it is clear that in the developed countries, including Israel, an even larger number of hazardous materials are used, which have not been categorized as such. In those cases, supervision and tracking are impossible.

The Ministry of Environmental Quality regularly carries out periodic surveys checking the link between the residents' health and industrial activity in their vicinity. They compare industry-rich and industry-poor areas and industrial areas where safety rules are enforced as compared to those where they are not. The groups surveyed are high school students (who are chosen because they do not smoke), from the two areas. They are students who have been medically tracked for a period of a year and more. The results of the survey were as might be expected: The health of residents, especially in terms of the respiratory systems, for those who reside close to industrial plants, is worse than that of those residents whose homes are more distant from the factories.

The survey also indicates that strict adherence to safety rules lessens the damage. The findings for Hadera, for example, show that its coal-fired power station is not hazardous to the residents' health because of a strict observance of the safety rules. The surveys also found that the Kfar Saba' area is one of the cleanest in Israel, while Haifa and its environs, certain areas in Beersheba, Gush 'Ashdod-Yavneh and the industrial area in Petah Tiqva are considered the areas with the highest air pollution in Israel.

Particularly serious is the question of waste disposal in general and toxic waste disposal in particular. A few years ago a national site was set up in Ramat Hovev in the Negev to which all toxic waste in Israel was to be sent. In Shmu'el Brenner's estimation, the site is functioning successfully in eliminating inorganic waste materials in a reasonable fashion. That waste is neutralized, broken up and buried at the site without constituting a hazard to the environment. But the same cannot be said of organic waste. That waste is stored at Ramat Hovev on the surface or buried beneath the ground, without undergoing a process to neutralize it of its toxins, as is customary the world over. The Ministry plans to set up a huge incinerator to burn and neutralize organic waste of its hazardous components. But the construction of the incinerator has been delayed because of budgetary considerations. Dr. Brenner warns that: "Israel is living on borrowed time. If we don't have the incinerator within

three or four years, I see a very serious situation, to the point that we will no longer be able to dispose of toxic organic waste at Ramat Hovev."

No less of a danger is seen in medical waste, originating from hospitals, research institutes and health institutions. Contrary to the guidelines of the World Health Organization and contrary to accepted practice in Western countries and particularly the United States, this waste is not disposed of properly in Israel. In the United States, they are very strict about the disposal of medical waste—toxic, carcinogenic and bacteriologically infectious materials—in special red bags, which are taken to a special site and separated. In Israel it is taken to municipal garbage dumps and is not treated separately.

#### Four Stations for Monitoring Radioactivity

In everything having to do with radioactivity and nuclear activity, more is unknown than is known. The Ministry of Environmental Quality operates four stations—in Yavneh, Haifa, Tel Aviv and the Negev—for monitoring environmental radiation, including radioactivity in the air, and is responsible for supervising and tracking all civilian institutions using nuclear materials. But the Ministry's authority ends at the jurisdiction of the Center for Nuclear Research in Nahal Shoreq and the Qiryat Zedek for Nuclear Research in the Negev, which are big consumers of radioactive materials. Those two institutions are the responsibility of the Committee for Atomic Energy in the Prime Minister's office. In order to forestall criticism, since "the cat really is watching over the milk," there is a supra-committee that operates modestly here, the Committee for Nuclear Safety, known by the acronym BATGAR. Its job is to oversee the Committee for Atomic Energy and to worry about the safety of the two reactors in Nahal Shoreq and Dimona. In practice, decisions are made in secret by a handful of people without reporting procedures or publication to the general public.

The very serious charge of the possibility of radioactive pollution of the aquifers in Israel, mentioned in a book published about two years ago in London "The Unseen Bomb: The Nuclear Arms Race in the Middle East," will be discussed in one of the upcoming sessions of the Committee for Atomic Energy. The book was written by the British nuclear physicist and scientist Dr. Frank Barnaby, who was part of a team of scientists hired by the British SUNDAY TIMES in 1985 to check the accuracy of Mordechai Vanunu's book. According to Barnaby, Vanunu, who worked as a technician at the reactor in Dimona, claimed that radioactive waste was being transported at night and buried in the Negev without supervision, thus endangering the workers. It was likewise claimed in the book that the nuclear reactor released toxic materials into the air whenever the wind blew eastward in the direction of Jordan. Those claims by Vanunu, as quoted by Barnaby, were not published in Israel.

In the Qiryat Zedek in the Negev there is a national site for the disposal of radioactive waste, and, according to the responsible authorities, it is operating without mishap. Nevertheless, experts who asked to remain anonymous expressed the opinion that it would be desirable to increase supervision over the disposal of nuclear waste. In particular they expressed the fear that some of the waste that had been removed had penetrated over the years into Israel's underground aquifers and polluted those water sources.

A thick veil of secrecy, only rarely removed, covers not only everything having to do with environmental quality at those two plants, but also, and perhaps in particular, the working conditions of the employees there. About four months ago there was an accident at the Tzofim plant, located in the Center in Nahal Shoreq. The plant, under joint government and private ownership, uses radioactive materials for the food industry. As a result of the accident one worker, Mordechai Levi, was injured and died a few weeks later. The family, assisted by the Department of Safety of the Histadrut, accuses the plant's management of negligence and of responsibility for his death. The management rejects the charge, claiming that the worker did not take the required safety and precautionary measures. Meanwhile the incident has not yet reached judicial channels. An incident that has made it to court has to do with an engineer who worked in the Dimona reactor and came down with kidney cancer. About two years ago he submitted a claim for damages for the loss of an organ. After initial courtroom arguments, the management agreed to pay monetary compensation on condition that the incident not be publicized.

One way or another the safety of workers in the work place, in every plant, whether defense or civilian, is one of the most painful and sensitive questions, and the veil of secrecy is shed only when it gets to the point of courtroom polemics. Within factory walls, as in the case of environmental nuisances, the list of work accidents and damage to health is long.

After a delay of years, awareness has finally reached Israel that asbestos, which is mined as a mineral from the ground, releases fibers during the process of mining and rubbing that are considered carcinogenic and affect the health of anyone who comes into contact with them. Last month the government issued new regulations and restrictions on the use of asbestos in Israel. It is permissible to import only 300 tons of asbestos cement (which is used for building walls and piping) and about 6,000 tons of raw asbestos. Similarly, the new regulations forbid the use of asbestos in the manufacture of brake linings for vehicles as well as for ornamental goods such as pedestals and flower pots. Also forbidden is the use of fire-resistant protective garments, especially for firemen, which contain asbestos. Nevertheless, in the Scandinavian countries and in the United States, there is a complete ban on the use of asbestos. The largest asbestos manufacturer in the United States, Johns Manville of Denver, Colorado, terminated its activity about two



years ago because of thousands of damage claims and set up a fund of about two billion dollars to cover those claims. Sixty-five members of the "Organization of Asbestos-Exposed" in Israel have submitted claims to the fund for payment toward damages. Yet, despite the restrictions on import and manufacture, there is fear in the Ministry for Environmental Quality and in the Histadrut that, against the backdrop of rising immigration from the U.S.S.R., asbestos will again be used to build prefabricated housing. "We appealed to the housing industry," noted Dr. Brenner, "and asked them to make sure that no houses are built and no trailer homes or prefabricated structures imported with internal walls and panels of asbestos."

In recent years, under the influence of Western culture and the increasing importance of ecological issues, awareness of worker health protection is also increasing in Israel, but the situation is still far from satisfactory. Workers in hazardous plants do not have regular checkups, are not always aware of their rights and often find themselves deceived about everything having to do with the dangers of their work conditions. Often, the issue of their exposure to hazardous substances only comes up as a result of labor disputes or before firings. Furthermore, what is published in the press on this issue is merely the tip of the iceberg of what is really there.

#### He Admits Half-Heartedly

"The attitude of the authorities to worker health," says Dr. Jerry Westin of the Occupational Medicine unit of the Hebrew University, is simply frightening. It is a nightmare." Dr. Westin, who did his residency in preventive medicine in Ohio and has previously been involved in confrontations with the medical establishment in Israel, stresses that Israel has no official authority like NIOSH, the National Institute for Occupational Safety and Health located in Washington. "When a factory worker in the United States submits a claim against his place of employment, Institute investigators will show up there the very next day to check into his complaint." The responsibility for civilian worker health, hygiene and safety in Israel (workers in the defense system and sensitive defense plants are outside the realm of supervision) falls upon the Ministry of Labor and Welfare. "If the situation is so bad in the large relatively well-run plants, one can only imagine how serious it is in little plants. Who would have any idea if small garages use asbestos for brake linings or not?" they ask rhetorically. "That is just one of many possible examples." The person who is supposed to know is engineer 'Efra'im Kahalon, the national labor inspector in the Ministry of Labor. But he confesses half-heartedly that the oversight situation is unsatisfactory.

According to his testimony, over the last decade the number of inspectors has dwindled from 100 to 70. While in the Western world it is customary for labor inspectors to be engineers by training, in Israel only 75 percent hold an engineering degree. In Israel the inspector is responsible for an average of about 1,000

work places. That is to say, he has to visit three work places every day and check into workers' safety, hygiene, welfare and health. In the U.S. and Europe the inspector is in charge of an average of just 300 plants.

It is no wonder then that the work load and lack of manpower result in the number of on-the-job accidents in Israel—all accidents and not just those involving hazardous or toxic substances—being four times higher than in most industrialized countries. More than four percent of all employees in the economy are injured as opposed to less than one percent in the West. It is a question, says Kahalon, of 60,000 people a year out of a work force of one and half million.

Dr. Yosef Rosenbaum, the occupational physician of the Pazkim plant, who, with his staff, is supposed to find out if plant workers have come down with illnesses as a result of exposure to toxic substances, tried to pin the blame for defective oversight on the work load. "Since the beginning of the seventies," he told a subcommittee of the Labor Committee, "we have instituted annual medical checkups. It is, however, true that there was an interruption in checkups between 1986 and 1989, but that was because of excessive demands on the department and because of special circumstances such as reserve service. We also terminated chest X-rays for several years but have recently reinstituted them." At the Tadiran plant medical checkups for workers were interrupted over an eight-year period from 1979 to 1987.

MK Tzeven, like Dr. Westin and Dr. Richter, receives many worker complaints, sometimes anonymously, about defective oversight or health hazards. Tzeven feels that the problem is not just the shrivelling of the system or the heavy work load that burdens the inspectors. "A strange work ethic has evolved," he complains. "Inspectors arrive for routine checks at the work place and make do with a conversation with the plant manager and a tour in the company of the manager, instead of having confidential discussions with the workers, especially those stationed in hazardous locations."

A further criticism of the Labor Ministry's oversight system was levelled by a judge of the National Labor Court, Steven Adler. He notes that in the last twenty years there has been a drastic decline of 80 percent in the number of criminal charges filed in the courts for safety violations.

Efra'im Kahalon completely rejects the criticism directed at his unit and also disputes Judge Adler's data. He claims that there has been only a 35 percent drop in claims filed, and that is a result of the low fines imposed by the courts on plants found to be in violation. "The courts may impose fines of up to 9000 shekels, but in fact most of the fines imposed there are much less. As compared to the criminal justice system, we have, in the oversight system, stricter and more deterring means of punishment, including fix-up writs with accompanying fines of 45 shekels per day until the problem is taken care of, and if there is an immediate danger, we issue safety

writs. If the instructions are not carried out, we can file charges." Last year, he says, about 1,200 writs and 500 charges were filed. Kahalon does not know how many of the writs and charges had to do with safety violations over mishaps involving hazardous or toxic substances. But he estimates that about five percent of the writs issued were against plants using such substances.

The General Director of the Labor Ministry, Shmu'el Salbin, who was asked to respond to the claims in this article, said that he is aware of the problems and promised that changes would soon be instituted in the oversight system, with the aim of improving its work. It was learned that 'Efra'im Kahalon will leave his job in about a week. The official reason is that there was a dispute about the conditions of his service. Ministry management recently deprived 'Efra'im Kahalon of his vehicle privilege.

Checking the safety of plants also raises the issue of the functioning of government funds that are supposed to allocate funds for health, and environmental and occupational research, to provide answers to concrete problems. In particular, this involves the Committee for Preventive Action and Safety Research within the Labor Ministry. This committee gets one percent of the corresponding tax monies. Its budget last year came to twenty million shekels. But only half of that sum was allocated for research. This phenomenon of the non-use of monies has been going on for more than ten years. The unused funds are transferred to Kupat Holim for other purposes.

Committee members claim that no appropriate research proposals were submitted. But researchers and academics charge, instead, that the committee members represent mainly institutional interests and are afraid of allocating monies to independent researchers who "are not part of us."

Everyone who deals with plant safety issues finds that change is also required in the activity and attitude of the health institutions, and particularly of the Histadrut's General Kupat Holim. The Kupa finds itself at times in delicate situations in which it must determine if workers who are in confrontation with the management of the Histadrut's own plants fell ill as a result of negligence on the part of their employers. The police investigation into the incident of Tadiran's battery plant will try to examine, among other things, if the medical files of several workers disappeared, and if so, why.

The first condition for improving the serious situation is, therefore, a change in legislation and the institution of newer, more up-to-date rules. Thus, for example, the law should read that workers who come into contact with hazardous substances must undergo regular checkups. Similarly, government oversight should be increased and regulations should be enforced governing plants that constitute a potential nuisance to the environment and endanger the health of their workers. A comprehensive PR effort is also needed to increase worker awareness of issues of environmental quality and their health.



### First Edition of Ecological Weekly Published

LD2602102191 Moscow TASS in English 1941 GMT  
25 Feb 91

[Text] Moscow February 25 TASS—A "zero" copy of the all-union ecological newspaper SPASENIYE (SALVATION), whose publication was provided for by a Soviet parliament decision, has appeared in print.

The newspaper carries a message of greetings from President Mikhail Gorbachev. The message reads in particular: "Our world must survive and become happy. It is not for 'the sake of turning civilisation's blossoming into its decline that the world has been evolving for millions of years. Therefore we have abandoned the idea of conquest and come to adopt the idea of cooperation—cooperation with every individual citizen, peoples and nature which as everything living does not tolerate violence'". [as received] The newspaper is expected to be published once a week. It has been founded by the USSR State Committee for Nature Conservation [Environmental Protection] and the "Business World" Consortium.

### More on New Ecological Newspaper

LD0303053691 Moscow Domestic Service in Russian  
1800 GMT 2 Mar 91

[Summary] The first edition of an ecological newspaper, SPASENIYE [SALVATION] has been published. Correspondent Aleksandr Ruvinskiy speaks to the chief editor, Chelyshev, and Vorontsov, chairman of the USSR State Committee for Environmental Protection, on the aims of the newspaper. One of the speakers says the first edition has a run of only 30,000 for the whole of the country. In principle it can be published weekly and will be available at newspaper kiosks after technical problems are sorted out with Soyuzpechat. Enterprises, Soviet and foreign scientists, and green movements will take part in the publication.

Ruvinskiy says that the newspaper is an organ of the State Committee for Environmental Protection.

Vorontsov says that not less than 40 local ecological publications are being published in the country. There are publications at the republic level, such as those in the Ukraine. There are also regional publications; for example, a bulletin is being published in the Baykal region, [and] in the Kola Peninsula. There are publications published in two languages, not only in Estonia and Uzbekistan, but also in Tuva, where a newspaper is being published in two languages. Every newspaper deals with its own regional problems.

Vorontsov stresses the necessity of cooperation within the whole country, so that a catastrophe of nature can be halted if a sober policy is implemented. He notes that there is a vacuum of information, which this newspaper will help to fill.

Chelyshev notes that this publication is actually based on a Supreme Soviet decision on extraordinary measures and that the State Committee for Environmental Protection is one of the cofounders. Vorontsov notes that there is also a decision by the Council of Ministers to this effect.

Chelyshev gives the example of the Dnepr River as an international problem. With the consent of the cofounders, it was stated that the editorial staff will conduct an independent and sober policy in the interests of truth. Ruvinskiy asks whether there is a possibility of subscribing to the newspaper. Chelyshev says the only way is for organizations to apply to a local Soyuzpechat [office] for the number of copies they need, and the order will then be telexed to Moscow.

### Commission Report Analyzes Cause of Chernobyl Disaster

LD1902192291 Moscow TASS in English 1839 GMT  
19 Feb 91

[Text] Moscow February 19 TASS—Physical and constructional faults of the reactor at the Chernobyl Nuclear Power Plant were the major cause of the breakdown, says a report by a commission of the Soviet State Committee for Safety in Industrial and Nuclear Power Engineering.

The report analyses all the data pertaining to the disaster.

In addition to gross violations of operating procedures by the staff, the commission revealed about ten deviations from regulations and rules of the reactor's exploitation.

The reactor's control and back-up safety systems did not meet the necessary safety and constructional requirements. It also had poor physical characteristics.

The commission noted that the reactor's designers could not estimate possible consequences of its instability, while the plant's personnel failed to foresee the results of their violations.

The commission stressed the need to continue studying breakdown situations in order to work out safety measures for nuclear power plants.

### Russian Parliament Concludes Chernobyl Problems Still Unresolved

LD2002212291 Moscow TASS in English 2033 GMT  
20 Feb 91

[Text] Moscow February 20 TASS—Almost five years have passed after the Chernobyl disaster, but many problems caused by the national calamity are still unresolved, the Russian parliament concluded today.

The parliament was discussing the draft state programme to clean up the aftermath of the Chernobyl disaster.

Russian territories contaminated with radiation include not only the regions neighbouring Chernobyl. The situation in the over-industrialised Southern Urals is no less complex.

Over 2.27 million people in Russia directly suffered from the Chernobyl disaster. Some 3,000 settlements have been contaminated, first and foremost in Bryansk and Tula regions in central Russia.

Cleaning the aftermath of the disaster has become a priority for the whole state. Billions of roubles have already been allocated to this end, but it will take at least two billion roubles more, Chairman of the Russian State Committee to Clean up the Aftermath of the Chernobyl Disaster Semen Polishchuk told TASS.

In some districts in the Southern Urals, such as the Chelyabinsk region, radioactive contamination has been critical for over 40 years. USSR People's Deputy Aleksandr Penyagin told parliament that the ecological situation there is "without a world precedent."

Penyagin said that about half a million people have suffered from radiation over the 40 years, since plutonium processing began in the region. Radioactive wastes with radioactivity amounting to over a billion curies (equivalent to 20 Chernobyl disasters) have been stored on 30 square kilometers in the region, he said.

After discussing the situation, the Russian parliament decided to elaborate a number of documents, including bills concerning social protection of people, who fell victim to radiation.

### **Belorussian Supreme Soviet Adopts Protection for Chernobyl Victims**

*LD2602101291 Moscow Domestic Service in Russian 1900 GMT 25 Feb 91*

[Text] The Belorussian parliament today adopted a law on the social protection of citizens who suffered as a result of the Chernobyl Nuclear Electric Power Station accident. It is based on a concept worked out by Belorussian scientists. It differs substantially from the concept worked out by the USSR Academy of Sciences Institute of Radiation Medicine which was accepted by the USSR Council of Ministers State Commission on Emergency Situations.

The permissible maximum radiation dose must now not exceed 0.10 rems a year. Previously this figure was 0.5 rems. The law defines four zones, depending on the density of radioactive pollution, where evacuations will take place. Compensation will be paid for living in the affected areas and social benefits will be distributed.

The decision on putting the law into effect states that the republic will be indemnified for all expenditures connected with implementing the law from union budget resources. The Belorussian Council of Ministers has been instructed to adopt specific measures necessary for

this. The Belorussian parliamentarians' Chernobyl package has several other documents.

### **More on New Belorussian Chernobyl Compensation Law**

*LD2602205191 Moscow TASS International Service in Russian 1845 GMT 25 Feb 91*

[By TASS correspondents Vladimir Glod and Aleksandr Kryzhanovskiy]

[Text] Minsk, 25 Feb (TASS)—A law "On the social defense of citizens who suffered from the catastrophe at the Chernobyl Nuclear Electric Power Station [AES]," has been adopted in Belorussia.

A quarter of the territory of Belorussia, on which more than 2 million people live, was affected by radionuclides. In the 3 years since the accident, the general rate of development defects among the newly born in the republic increased by 18 percent, and in strictly monitored areas of Gomel and Mogilev Oblasts, the increase is even greater. The law will not only protect inhabitants of "sick" land, but will also help save the future of the Belorussian nation—in 1988 in the republic, of children born in the republic, 63.3 percent were completely healthy, in 1989, only 53.3.

The law defines four zones, in accordance with the density of whose radioactive pollution an evacuation will take place, where compensation payments will be made for living in stricken territories, and social benefits for troubleshooters [likvidator] will be allocated.

The most complex issue is where to find the roughly R6 billion necessary to implement what has been planned. The republic budget deficit amounts to R3.5 billion. The resolution on bringing the law into effect says that all expenditure linked with its implementation will be compensated to the republic by means of resources from the Union budget, and the Belorussian Council of Ministers is instructed to take the specific steps necessary.

There are still several documents in the "Chernobyl" package of the Belorussian parliamentarians. The next of these on the agenda is the law "on the status of territories stricken as a result of the Chernobyl AES catastrophe."

### **Background Radiation Statistics for Ukraine Updated**

*PM0403143991 Moscow KRASNAYA ZVEZDA in Russian 28 Feb 91 First Edition p 4*

[Answer to reader's letter by Reserve Colonel V. Volshhev, leader of a Ukrainian Soviet Socialist Republic State Committee for Hydrometeorology group coordinating work on radiological and ecological monitoring; first two paragraphs are reader's letter: "More on Background Radiation"]

[Text] "I have read some information in a 'briefing' about which settlements in Belorussia have a level of

background radiation differing substantially from what occurs naturally. But what is the situation in the Ukraine?"

[signed] N. Samsonenko, Fastov.

Reserve Colonel V. Volshev, leader of the Ukrainian SSR [Soviet Socialist Republic] State Committee for Hydrometeorology group coordinating work on radiological and ecological monitoring:

"The amount of work concerned with the radiological inspection of settlements in the Ukraine is increasingly sharply. Whereas in 1986-1989 about 70,000 homes were inspected, in 1990 alone 600,000 were examined. A total of 20 million rubles have been allocated for 1991 to carry out this work in the Ukraine as part of the union republic program. Large contracting organizations are in charge of the inspection and work.

In the vast majority of settlements the natural level of background gamma radiation has remained unchanged from the average on Ukrainian SSR territory of between 0.011 and 0.020 milliroentgens per hour. For example, there are no deviations from the natural background level in the areas of Volyn, Rovno, and other oblasts even more remote from nuclear power stations. It is not raised in Kiev city. But there are areas where the background radiation is increased a little since the Chernobyl accident: Zhitomir Oblast (e.g. in Korosten the level is 0.039), Chernigov Oblast, and Kiev Oblast. The level is high in the village of Polesskoye (Kiev Oblast), for example, reaching 0.150 milliroentgens per hour. Let me remind you that the background radiation in Bragin, Narovlya, and other settlements in Belorussia is several times higher."

#### **KGB Staffers Review Need for Nuclear Power Plant Security**

91WN0217B Kiev PRAVDA UKRAINY in Russian  
4 Dec 90 p 2

[Article by V.F. Nosko and A.P. Ostapenko, Ukrainian SSR KGB employees: "Pickets at the Nuclear Power Plant: Or Fuses Made of Political Passions"]

[Text] The remarks offered to the reader have been written by people who are professionally concerned with ensuring the security of nuclear power plants. Fate so disposed that their authors, A.P. Ostapenko and V.F. Nosko, senior officers with the UkSSR State Security Committee, were at the site of the accident within several hours after the explosion at the Chernobyl Nuclear Power Station. The former was involved in evacuating people from Prip'yat, and the latter served on an operational investigative group. Both were subsequently taken out of the zone for medical reasons. Their observations and conclusions have been paid for with their own health. That is all the more reason that we should listen to them.

Today it can already be said that some "specialists" are not opposed to writing the Chernobyl accident off to

"the hand of the enemy." It is understandable that in the face of such statements the security agencies were unable to remain on the sidelines. The hard work of KGB officers made it possible to substantiate the conclusion that there had been no sabotage, and thereby to define other areas of search for causes of the reactor's explosion. The amount of what has been done can be judged from the following data alone. Altogether, KGB agencies have received more than 200 statements by citizens concerning the accident's possible causes, and more than 1,500 other documents pertaining to the elimination of its consequences. The government commission and the procuracy have been informed of the results of follow-ups on and the study of these materials. That is just part of the answer to those who ask the question: What is the reason for the presence of chekists at nuclear power plants?

The Chernobyl tragedy demonstrated to the whole world how vulnerable nuclear power plants are in a technical sense. However, it is not just mistakes in designing, unreliable equipment, or inadequately qualified service personnel at nuclear power plants that can result in accidents with grave consequences. Alas, the unique properties of radioactive materials attract people who by no means always have noble intentions and purposes. Lately, unfortunately, the term "nuclear terrorism" has become common in the world political lexicon. Because of the dangerousness of this phenomenon, it has been designated as one of the extremely urgent problems of national and international significance. Literally the whole world has responded with alarm to reports of various sorts of attacks on U.S. nuclear facilities, including attacks aimed at stealing radioactive materials, reports of an armed incident at a nuclear power plant in South Africa, and reports of attempted sabotage at nuclear power plants in France.

Special trained units have been set up in all foreign countries to combat nuclear terrorism. For example, there is a police administration for nuclear power in Great Britain. It protects nuclear power plants against criminal attempts and unsanctioned penetrations of plant grounds, maintains protection within a 24-kilometer radius, and is also prepared to for combat actions against armed terrorist groups.

In a number of countries legislative acts have been adopted that provide serious sanctions for unlawful actions with regard to nuclear facilities and radioactive materials. Thus, the United States has a law stipulating criminal liability or a fine of \$250,000 for violations of the IAEA [International Atomic Energy Agency] convention, which contains principles for the protection of nuclear power complexes that are uniform for all the organization's member-countries.

The ever-growing rise in crimes accompanied by cruelty and violence, the use of weapons stolen in military units and from the militia in interethnic conflicts, the increasingly frequent cases of the seizure and hijacking of airliners, and a number of other factors compel us to

think about potential acts of nuclear terrorism within the USSR, as well. It is no accident that in January 1989 the USSR Council of Ministers instituted special security procedures at all nuclear power plants; oversight over the implementation of these procedures has been entrusted to KGB agencies. And even before that, in March 1988, the Presidium of the USSR Supreme Soviet adopted the ukase: "On Criminal Liability for the Illegal Use of Nuclear Materials." The final touches are being put on the USSR law on the Utilization of Nuclear Energy and Nuclear Security.

As for state security officers, their goal is to prevent acts of sabotage at nuclear power plants, and to oversee the reliability of the system for operating and protecting those facilities. Such measures are carried out in close cooperation with the management of nuclear power plants, as well as with agencies and troops of the Ministry of Internal Affairs, in full accordance with the IAEA's recommendations and other international requirements.

And today we cannot fail to share the concern of the personnel of existing nuclear power plants, the builders, and the military personnel of the USSR Ministry of Internal Affairs' special forces that are guarding the Khmel'nitskiy and Rovno Nuclear Power Stations in connection with the picketing of those facilities by various public political organizations. Their most active representatives have even made attempts to penetrate into the protected zones, block the work of the nuclear power plants' operating personnel, and carried out other unlawful acts. Thus, the executives of the Khmel'nitskiy and former Crimea Nuclear Power Stations have received anonymous letters threatening them with physical violence if the construction and operation of generating units continues. It goes without saying that this sort of "social activeness" by no means contributes to the safe operation of nuclear complexes. Confrontation and an atmosphere of mistrust surrounding our nuclear power plants can have extremely grievous consequences.

Of course, one can also understand the public and the people living in proximity to nuclear power plants, who react with distress to every instance of fire, the development of other emergency situations, and unplanned stoppages of equipment. That is a manifestation of the "post-Chernobyl syndrome." But it can also be cured by providing people with accurate and truthful information. That is possible today since the country is developing a new approach to the understanding of state secrets and departmental secrets, the list of which has been considerably shortened. In nuclear power engineering nearly all information has become open. And now it is all the more inappropriate to ignite fuses made of political passions at such dangerous facilities as nuclear power plants.

### **Novovoronezh Nuclear Station Restores Reactor Vessel**

*OW2602085791 Moscow Central Television First Program and Orbita Networks in Russian 0930 GMT 19 Feb 91*

[L. Maksimov video report on Novovoronezh AES— from the "Vremya" newscast]

[Text] [Announcer] All reports on the state of affairs in the nuclear power industry are now held in special regard. A method for making the operation of an old reactor safe has been developed at the Novovoronezh AES [Nuclear Electric Power Station]. [Video cuts to show AES sign outside the power station, external and internal shots of AES]

[Begin recording] [Maksimov] This problem arose at the Novovoronezh AES. The third power unit was shut down after expending its service period. The theory of reactor restoration is known, but it is just theory. However, the Novovoronezh specialists have developed a practical technology. They dismantled the reactor, the vessel of which is shown here, and now are taking samples of the metal for analysis. Later, they will lower this powerful electric furnace into the vessel. With sufficiently high temperatures and fairly long exposure, a so called "roasting [obzhig] of the metal" will occur which will permit... [Camera pans to AES Director V.A. Zverev who continues the sentence]

[Zverev] ... its restoration, practically to its original state.

[Maksimov] How much longer will it be able to operate?

[Zverev] It will be able to operate indefinitely if we apply this metal roasting several times.

[Maksimov] This restores everything?

[Zverev] Yes, it does.

[Maksimov] Well, is there any danger?

[Zverev] No, the thing is, it is being completely restored. [Video cuts to show furnace being worked on]

[Maksimov] Here in the reactor hall we saw a group of specialists from the United States.

[Video shows Maksimov interviewing Norman M. Cole, representative of the "MPR Association" company, identified by caption; Maksimov is heard speaking briefly in English fading into Russian translation; factory noises block out first part of Maksimov's question]

[Maksimov] ...visit to the Novovoronezh Nuclear Power Plant?

[Cole, heard speaking briefly in English fading into Russian translation] In the United States, we have the same problems that exist here at the Novovoronezh AES. An installation to solve such problems has been developed in the Soviet Union, and we have come here to get



acquainted with this installation, and to study the possibility of using it at our nuclear electric power stations in the United States. This trip is very important to us. What has amazed us is the low radiation levels here in the working areas. We would like to acquire this knowledge. [Video shows worker measuring radioactivity inside the reactor vessel] [End recording]

### **Prospects for Cleaner Power Generation Program Explored**

*91WN0195A Moscow IZVESTIYA in Russian  
27 Nov 90 Union Edition p 2*

[Article by IZVESTIYA correspondent A. Illarionov, Novosibirsk: "It Gives Us Heat but Also Poison: What the Energy Program Has in Store for Us and Nature"]

[Text] During the current heated discussions on how to save ourselves from the energy crisis the power engineers have already been subjected to so many accusations that we can sympathize with them and even try to believe their reassuring statements which promise so much. But we cannot ignore an extremely important aspect of this work: what will the Energy Program cost us in terms of nature's health, as well as your health and mine?

In the area of the Ekibastuz GRES-1 [State Regional Electric Power Station] (which holds the world record for explosions and fires), alkaline dust burns pasture lands for tens of kilometers around. In places the soil looks as though ash from Kamchatka volcanoes had been brought in. The sheep definitely do not like it here, something which also concerns man, but the latter patiently adjusts to it. It is true that he does not suspect that the ash from the thermal power plants is not only alkaline, but also contains salts of heavy metals, which possess carcinogenic and mutagenic properties.

But even 10 years ago the Ekibastuz GRES was thought to be a significant step toward power generation for the future. Probably because those who designed this project were carried away by power capacity and were insufficiently concerned with problems of ecology. The energy shortage required that the construction of new facilities be accelerated. But no thought was given to the possibility that these giants would function as if in some horror story.

The extensive network of thermal power plants located throughout the country's vast territory has led to a situation in which their gaseous-dust trails, connecting up into dense poisonous clouds, from time to time drop acid rain onto the earth. The carbon dioxide saturating the atmosphere produces the greenhouse effect and promises global climate changes. And not for the better, of course.

The external manifestations of inadequate power engineering (and it is by no means inadequate in terms of capacity, providing us half of our heat supply) are no less insidious. In particular, the boilers stokers, who operate mostly within the cities, are not taking the trouble to maintain good conditions in the furnaces, and for this

reason the latter are discharging into the surrounding areas substances such as benzopyrene, which are little known to the population as yet but which have strong carcinogenic effects.

The conclusion is simple: before it is too late something must be done about thermal power generation. It would seem that the easiest and cheapest way out is to convert the TETs's [heat and electric power station] and boilers to gas. In this regard Novosibirsk is lucky: a large-capacity gas pipeline has been built. The citizens are satisfied, and the representatives of the oblast environmental protection committee have expressed particular satisfaction. But it would not be good for the ecologists to get too complacent. The deposits of this ecologically quite clean fuel are gradually becoming exhausted. And whether we want to or not, we will have to return to coal in the not-too-distant future.

This is all the more inevitable because in the immediate future we intend to leave behind with minimal losses the country's chronic shortage of electrical and thermal power. We can comfort ourselves that science knows what has to be done to reduce harmful emissions from thermal power plants. A scientist from Akademgorodok was trying to learn from colleagues in the FRG what the situation is there. He received the answer that in Germany this problem will be fully resolved within the next 15 years.

But what in Germany is natural and simple is for us a serious problem. The difficulty is above all that ecology comes into conflict with our traditional power-generation technology.

This might seem strange given that our boiler-building industry is one of the strongest in the world, and scientifically the industry has enormous experience and outstanding traditions. But, first of all, the requirement for an absolute increase in capacities could not fail to have an effect on it. And, in the second place, the oil euphoria at one time diverted many scientists from the problems of efficient and ecological coal combustion.

Six years ago at a conference on the combustion of solid fuel in Akademgorodok, Academician Ya. Zeldovich, who was talking about progressive methods of coal combustion, called on scientists to concentrate on the ecological problems of power generation. His proposals were approved, and we went to work on them with our characteristic lack of speed.

The scientific support for the ecologically clean thermal power generation of our future is being coordinated from the USSR Academy of Sciences (AS) by the Institute of Thermal Physics of the AS Siberian Division (ITP), which is headed by Academician V. Nakoryakov and well known for its traditions. The institute's potential in the mathematical modeling of combustion and heat exchange processes arouses interest abroad as well. How tempting it would be to propose to foreign boiler-making companies an exchange of scientific information and

practical designs in order to accelerate the realization of those designs in our country...

But it would be a very great injustice to say that we have shown only negligence in the realization of scientific designs. In this regard A. Burdukov, ITP deputy director and doctor of technical sciences, reminded me of the work by the Leningrader N. Golovanov, designer of an experimental-industrial boiler—a prototype of the powerful KATEK boilers of the future—with a surprising vortical stoker. (I had the good fortune to go inside it when it was being installed). Its geometry creates something like a horizontal whirlwind of fire for the rapid and complete combustion of coal particles. N. Golovanov is not with us today, but his boiler has provided millions of kilowatt hours of power, and today it is a reality. However, the process of refining it ecologically has dragged on for more than six years and there is no end in sight.

It is true that a whole program for ecologically clean power generation has been worked out. Its authors cannot be accused of excessive optimism or lack of self-criticism. They recognize that the technical problems of reducing carbon dioxide emissions were not worked on before, and that the problem of using and reusing water in a closed supply system is now a serious one, which is related to the problem of heat pollution of rivers and lakes. As gigantic new power installations come on stream, the risk of this kind of pollution increases.

The program frankly recognizes that even if devices to reduce emissions of sulfurous and nitrogenous oxides are introduced in the 13th Five-Year Plan as expected, the atmospheric emissions of sulfurous oxides at 80 plants will increase up to the year 2000, while oxides of nitrogen will remain at the previous level (if one is to believe other scientific sources, they will increase). In short, by the beginning of the 21st century every square kilometer of the country will receive annually six to seven quintals of these oxides. And if one takes into account harmful discharges of chemicals—it will be an entire ton.

How long can nature hold out against such striking cruelty? I addressed that question to Galina Ilinichna Girs, doctor of biological sciences and laboratory head at the USSR AS Siberian Division's Institute of Forestry and Timber.

It turns out that, fortunately, the power specialists will not succeed in killing off the soil. The soil possesses colossal reserves of resistance against this poisoning. But the vegetative cover will react to regular emissions, especially in regions of elevated pollution. The first to retreat are the lichens, including reindeer moss, which is the principal food of deer. Next to retreat are the mosses, and then the coniferous forest. As it degrades the annual growth of wood is reduced, as is the life span of the trees. The deciduous trees will be forced to drop their leaves in the middle of summer (as the aspen in the Central Volga

area already do). If this is repeated regularly, they will use up more rapidly their vital resource—the last step in the destruction of vegetation is the degradation of the grass cover.

The air pollution from industry spreads beyond the country's boundaries as well. In Norilsk they told me that Canadians had made claims on a Norilsk combine. I addressed this same question to specialists on the chemicalization of agriculture at the Siberian Division of VASHKNIL (All-Union Academy of Agricultural Sciences imeni V.I. Lenin). They agreed that a ton of oxides per square kilometer per year is a lot. But they went on to complain that the industrial oxidation of soils and specific agricultural crops is a problem which has not yet been thoroughly studied.

And it turns out that the growth in harmful industrial emissions is outstripping growth in the study of their consequences. If things continue this way, there may come a time in the near future when the biological objects of study are not there any more; there will be nothing to study.

What is the solution? I tried to obtain an answer to this question from the creator of well-known ecological technologies, Yu. Matrosov, laboratory chief at the Institute of Catalysis of the USSR AS Siberian Division:

"I have the greatest respect for my colleagues at the Institute of Thermal Physics and for their important and promising designs," he said, "but the time periods required for ecological improvements in power generation do not suit us. We cannot wait for a massive change in the equipment at power stations (which will cost tens of billions of rubles); it is essential to do something today to treat the harmful emissions of existing TETs's, GRES's and boilers. Specifically, treatment devices which use the method of nonstationary catalysis make this possible. These devices are simple to install and manufacture; the method which is the basis for their operation was developed at our institute, and it is widely recognized in such industrially-developed countries as Japan, FRG and the United States of America."

This formulation of the question is attractive because it gives priority to a practical possibility—available today—for protecting nature.

### Careless Handling of Radioactive Sources, Poor Monitoring Examined

91WN0217A Moscow TRUD in Russian 11 Jan 91 p 4

[Article by V. Davydov, TRUD special correspondent: "Lethal Cargo"]

[Text] Moscow and Petropavlovsk-Kamchatskiy—The "blank spots" on the map of the country's radiation situation are resulting in thousands of people regularly receiving "doses" of radiation that could easily be avoided. The lack of complete information concerning

this matter and of individual means of measuring ambient radiation sometimes have tragic consequences.

It was an ordinary work day at the Freza Ship Repair Yard in Petropavlovsk-Kamchatskiy. The hull workers were completing repairs on a refuse barge intended for hauling sewage. The barge was standing in the slip of a floating dock, while the shipyard workers were scraping its hull, cleaning off barnacles and rust.

Suddenly one of the workers started feeling sick: He felt dizzy and started vomiting. The doctors, who came promptly in response to a call, suspected radiation sickness. A group of specialists from the oblast radiation-safety center headed by M. Rayzman took measurements on the dock and reached the conclusion that there were sources of serious radiation there. The source turned out to be the refuse barge itself.

The radiation level along the barges hull was six times the permissible norms. But who was to blame? How did the radioactive contamination get into the port?

The barge captain V. Matviyenko knew nothing about hauling any sort of radioactive waste on his vessel: his sanitation certificate was perfectly in order. Consequently, the shipyard workers were not warned about the elevated radioactivity. No special work order-authorizations for performing work under especially hazardous conditions were issued, and no one saw to it that shifts were shortened and additional pay provided for work under especially hazardous conditions.

It would seem that the news about the accidentally discovered information should have forced the shipyard management to take prompt measures, but despite Rayzman's prescription, work was not halted. The workers were deceived and told that there was no radiation on the barge. The ship was refurbished and launched. The dock was washed off with a disinfectant.

I managed to meet with M. Rayzman, who is no longer working at radiation-safety center. Nonetheless, he still had the document on the barge inspection, which clearly and circumstantially recorded the fact that the vessel was "emitting" microroentgens. The document was signed by A. Ryabenko, the shift dockmaster, and N. Babyak, the dock shop chief. But what is astonishing is that in the local newspaper N. Babyak blamed what had happened on the workers! He explained the deterioration in their health as follows:

"They drink glass cleaner and throw up."

I spoke with the shipyard workers. They were indignant at their boss's fabrication and demanded that he apologize. But they did so in vain: Babyak would not take back his words. Can it be that he really believes that the talk about radiation is pure fabrication? Yet the facts indicate that even in small doses it has potential consequences about which we still know far from everything.

On Kamchatka I learned about a strange coincidence: at the ship repair yards, in hull workers' brigades like the

one that was cleaning off the refuse barge at the Freza Shipyard, people who have been employed in that occupation their whole lives do not live to see retirement. Brigade leader Ye. Kabzistov, winner of two Orders of the Labor Red Banner and member of the bureau of the Kamchatka CPSU Obkom, explained to me:

"The substantial pay increments and regional pay coefficients have inured many Kamchatkans to the idea that they live under hazardous conditions, which means that they shouldn't grumble if something unusual happens to them. After all, it's an extreme zone. For the same reason, Kamchatkans try to move to more tranquil realms before they reach retirement age. That's why no one is really surprised that you don't see any pensioners on the streets....And under these conditions, it is hard to keep any accounting of who fails to 'hold out' until their well-deserved rest, and why."

To the brigade leader's words, one might add: some people simply find it disadvantageous to keep any such accounting. Rather than explaining why it is that the hull workers die so early, it is far simply to write everything off to the hardships of the remote region. It is a screen that can be used to conceal any sort of negligence you like, including radioactive negligence. And that such negligence is a common occurrence on Kamchatka is indicated by the facts:

**An expedition of local hydrobiologists disembarked on a nearby island. The scientists went into the lighthouse, whose power generator was capable of supplying electric power to a relatively small settlement for decades. They found it unsupervised: equipment was lying around haphazardly, and there were no control systems. And that was despite the fact that there was a familiar triangular sign hanging above the generator bearing a special symbol and the inscription: "Radioactivity!"**

**An aerogeography party from Yelizovo Geographic Expedition inspected the region of the oblast center by helicopter and, with the help of instruments, identified about 15 locations with elevated ambient radiation. Four of them were in the very center of the city. One of the hazardous zones was the central square. The statue to the leader that stood in it was emitting about 50 microroentgens an hour—the limit beyond which significant human health disorders begin. The problem was that the base, as inspection showed, had been faced with granite that was interspersed with uranium and thorium.**

**In a settlement remote from the Petropavlovsk Bay, a group of scientists under the leadership of G. Snytkin, chief radiologist with the Kamchatka Oblast Environmental Protection Committee, discovered 20 radioactive anomalies containing levels of gamma radiation greater than 4000 microroentgens per hour. The highest radiation level was in the area of a municipal and domestic waste dump. A source of radiation was even found in the settlement school. It turned out to be a sample of magnetic iron ore that had been prepared by the USSR Ministry of Education and was emitting 320 microroentgens an hour.**

All this indicates one thing: the oblast leaders' underestimation of the danger of radioactivity. Can one hope that the situation will change for the better in the future?

"Every year in our country the number of instruments and devices emitting radiation increases by an average of five percent," says Oleg Partolin, head of the radiation-safety laboratory of the All-Union Research Center for Labor Protection. "And that means that our radiation protection should be increased by the same magnitude. First of all, we must provide measures to eliminate the useless risk where it is possible to do without things that needlessly expose people to radiation."

Whatever one says, the prospects for the future are clear, and they are not happy ones. Radiological monitoring measures must be enhanced. Explanatory work that is as honest as possible needs to be conducted—among both ordinary citizens and leaders of all ranks. It is important to recognize the sort of danger to which people are subjected in a radioactive zone, and of course, to hold the people who are responsible for conducting such work more accountable.

### **Effort To Eliminate Moscow's Radioactive Hotspots Examined**

91WN0252A Moscow *RABOCHAYA TRIBUNA*  
in Russian 30 Jan 91 pp 1, 3

[Article by Natalya Kozlova: "A Sentence in Roentgens"]

[Text] The background changed, increasing in intensity as the instrument was raised higher and higher. This told the specialists one thing—the search had to be continued in the upper stories. A senseless effort at first glance. There were many dwellings in the district. Who discarded the suspicious trash? The radius of the search area on Moscow's Severo-Dvinskaya Street grew shorter. Time will pass and then neighbors will tell the story about one of their neighbors, who fled to his car in a panic in bedroom slippers and drove off somewhere after noticing people with instruments scurrying around below. The militia showed no visible enthusiasm in relation to this and to other facts. It will be a year before they are brought to bear.

It was after the Chernobyl tragedy that we began seriously talking about radiation. At times the huge flow of "radioactive" news that rained down upon the heads of the unprepared people struck terror in them, while at other times it caused them to breathe a sigh of relief, depending on who was doing the talking or the writing. Having confined the danger zone to the bounds of nuclear power plants on a purely geographic basis, we continued to maintain the certainty that if something is bad and dangerous, then it must be near reactors. But unfortunately, the situation is far more serious today.

### **Rodon and Others**

Radioactive wastes were buried not far from the suburban Moscow city of Zagorsk. This was in 1978. Back then, the dangerous cargo was carried out of Moscow by a low-profile organization no one knew anything about—the Rodon Scientific Production Association. Rodon was assisted, at its own request, by the Central Geologorazvedki Expedition of the USSR Ministry of Geology. The goal of the latter was to check the routes to be traveled by the vehicles carrying radioactive waste. This was done by special inspectors from the expedition, equipped with instruments and transportation. According to the inspection results the routes traveled with the wastes were "clean." To put it more simply—the radiation background was normal. When a problem was detected, it came from where it was least expected, the troubles tumbling down as if from a horn of plenty. The instruments recorded elevated radiation in gutters, on road shoulders and in dumps. And Rodon, of course, had nothing to do such places.

There isn't just one culprit. There are a mass of industrial and scientific institutions which use instruments containing radioactive components, or which create wastes dangerous to human health. But the instruments grow old, and it's too much trouble to surrender them for burial. Nor can you avoid headaches when it comes to disposing of radioactive wastes. It is terrifying to imagine that just owing to our indifference, cities, both large and not so large, have become a zone dangerous to life.

We are paying today for our habit of many years of shrugging things off: "Oh, it'll all turn out all right in the end."

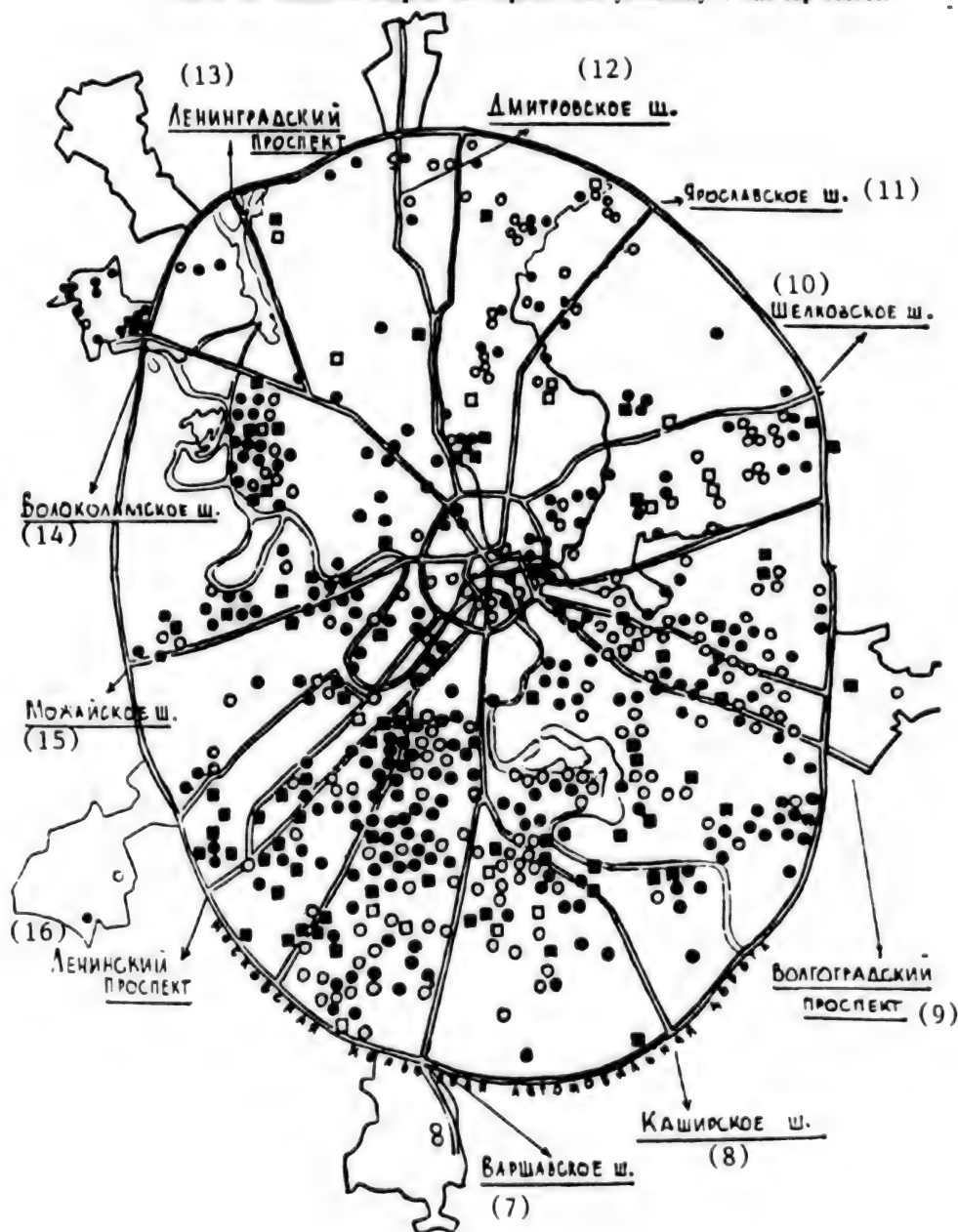
### **A Scale for the City**

The Moscow City Soviet knew that something incomprehensible was going on in our motherland's capital regarding radiation. It even granted special permission to survey the contaminated places. A consistent effort was begun in 1982. Background readings were taken in parks and squares, side streets, homes and trash heaps. When they were all pieced together, they produced a most alarming map of the city. The number of areas requiring decontamination very quickly attained several hundred.

The scale of the work for Moscow was set initially at 2,000. This means that instrument readings were marked on the map every 20 meters. The results were as surprising as they were frightening. They began converting to a 1,000 scale—documenting the recordings every 10 meters. A 500 scale was adopted for inspection of children's institutions. And there were full grounds for doing so. Be aware that the normal background for Moscow is 12-16 microroentgens per hour. In the children's Playground No 1 of departmental day care centers of the Institute of Nuclear Power Engineering imeni Kurchatov, instruments recorded spot values of up to 612,000 microroentgens per hour! This happened



This is the radiation map of the capital. Just yesterday it was top secret.



(1) УСЛОВНЫЕ ОБОЗНАЧЕНИЯ

- |   |  |
|---|--|
| □ Участки с площадным распространением радиоактивного загрязнения (2) | Максимальное значение мощности экспозиционной дозы гамма-излучения (4) |
| ○ Участки с локальным характером радиоактивного загрязнения (3)       | ○ □ от 120 до 1000 мкр/ч (5)   |
|   | ● ■ от 1000 до 1000000 мкр/ч (6)                                       |

Key:

1. Legend
2. Areas of blanket radioactive contamination
3. Areas of local radioactive contamination
4. Maximum gamma-radiation exposure dose rate
5. From 120 to 1,000 microroentgens per hour
6. From 1,000 to 1,000,000 microroentgens per hour
7. Warsaw Highway
8. Kashira Highway

9. Volgograd Prospekt
10. Shelkovskiy Highway
11. Yaroslavl Highway
12. Dmitrov Highway
13. Leningrad Prospekt
14. Volokolamsk Highway
15. Mozhaysk Highway
16. Leninskiy Prospekt

because the playground was built on untested ground. In the absence of health department conclusions concerning construction. Something that is generally unacceptable in Moscow, by the way.

### Radioactivity in the Schools

The former Central Geological Expedition has now been reorganized as the Geo-Ecocenter of the Geologorazvedka Concern. The Geo-Ecocenter is headed by Leonid Ivanovich Dmitrakov. He is the one who is fully responsible for finding and decontaminating radioactive areas in Moscow. He and his associates.

So here's what happened. When they checked 436 of Moscow's schools, even experienced specialists were disturbed. Radiation sources were found in 302 of them. But it seems that an order from the health department to immediately get rid of old instruments and of pieces of metal of unknown origin will go unfulfilled. I know it sounds preposterous, but no one is yet in a hurry to remove the dangerous trash from the schools.

The Geo-Ecocenter is able to report on its accomplishments as of this date. Though the report would be dispiriting. It discovered around 600 sources of radiation in Moscow. Fifteen have not yet been decontaminated. The number may not be large, but it would hardly cause anyone relief. Radiation, you see, is like the legendary hydra: Cut one of its heads off, and two will grow in its place. The capital's Central Park of Culture and Rest imeni Gorkiy was checked out, and everything was all right. But a repeat inspection revealed a strong source of radiation in a flower bed. The answer to the riddle was simple—fresh earth had been brought in. What makes the work of the searchers difficult is precisely the fact that radioactively "clean" areas of land are not a constant phenomenon. Here's a typical situation: Garbage, including radioactive trash, was dumped on the far outskirts of Moscow a dozen years ago. Years later a new microdistrict was built, requiring the upheaval of tons of earth. This work brings old but still-dangerous wastes back up to the surface.

The dumps may also be said to be unique record-holders. The "glow" from one such dump could even be detected from a helicopter.

A search for the owner of the radioactive trash led to the Podolsk Nonferrous Metals Plant. Breaking their way through the lobby "in force," the specialists discovered four contaminated shops. And the entire plant territory was also found to be contaminated. Decontamination has already cost the plant 12 million rubles. But this is only the beginning. The final sum will stretch to 40 million.

L. Dmitrakov feels that the most important thing is to organize constant surveillance not only over Moscow but also over all of the country's major industrial centers.

There is one other opinion as well. An opposite one, to be frank. Yu. Gusev, the director of municipal services

of Moscow's Oktyabrskiy Rayon Executive Committee, has no time for X-rays and other minor matters. He has plans of greater seriousness—turning the building currently occupied by the Geo-Ecocenter over to cooperatives.

### A Personalized Sports Shirt

Specialists followed the pointers of their instruments like trackers following a dog in the recreation zone in the suburban Moscow settlement of Mytishchi. The radiation background grew right before their eyes. The hiding place was in a pipe solidly sealed off with lead plates. But the radiation was so strong that it even breached these defenses. Some rags were found nearby, also giving off radiation. Among them was a child's sports shirt with the child's name embroidered on. This is how the address of that dwelling on Severo-Dvinskaya Street in Moscow once again "resurfaced." The sports shirt belonged to the child of the tenant of the apartment from which that person was seen a year ago running away in bedroom slippers on seeing those people with instruments.

Hundreds and thousands of microroentgens per hour were read by the instruments in the bathroom and toilet, and on the balcony. Try as they could, the investigators never were able to determine where and why the tenant of the apartment obtained the radioactive substance. All that is known is the term of his sentence—4 years in prison. This mysterious activity cost you and me a pretty penny. Decontamination alone cost over 250,000 rubles. And it's still going on.

### In Lieu of a Postscript

I know quite well how thankless a task it is to frighten people in our already frightening times. But this article was written not to cause a sensation. The radioactive contamination situation in Moscow and the oblast, and probably in many other large and small cities in our country, is extremely bad. This is precisely why the activities of the Geo-Ecocenter require the most serious attention and support at the state level. And nothing less will do. Moreover, we need to quickly extend its activities to other cities. Tests for radiation must be conducted continually, according to a plan. People who are trying to protect us from a serious danger to the extent of their powers and possibilities should not be dependent upon the sentiments of a rayon administrator. They should not be dependent upon his sympathies and upon his ideas of what is important or unnecessary in someone's work.

I can foresee the question: But where are we to get the money for all of this? I'm not the minister of finances. He, by the way, has now become the Premier—it's for him to take the reins of government in his hands. What we are talking about, after all, is the health of people. And that's something that should not be bought or sold.

### **Narva Official Criticizes Perceived Environmental Protection Weaknesses**

91WN0216A Tallinn SOVETSKAYA ESTONIYA  
in Russian 1 Dec 90 p 3

[Article by Yu. Mazanov, chairman of the Narva City Soviet Deputies' Committee on Ecology and the Efficient Utilization of Natural Resources: "Everything Becomes Known by Comparison"; first paragraph is source introduction]

[Text] A month ago an international exhibition entitled Environmental Protection-90 closed in Tallinn; it was the first of its kind in Estonia. A little before that a group of Finnish specialists on environmental protection had visited Narva. Both the exhibition and the visit by our northern neighbors were accompanied by seminars and extremely interesting reports. The general conclusion which can be drawn from them is quite trivial: environmental protection in the Western countries is at a higher level than in our country, despite the fact that we have more organizations involved in this kind of work than they do. Goskomgidromet (State Committee for Hydrometeorology and Environmental Control), the environmental protection administration, the public-health and epidemiology centers, the fishery protection agency, the marine inspectorate, and other services—they are all concerned in one way or another with environmental protection activities. And their effect is minimal.

At the seminars it became clear that one of the most important reasons why we are behind is that the level of their environmental protection legislation is higher than ours; it stimulates the development of progressive new technologies and the production of new equipment which helps to reduce harmful effects on nature.

It is true that we must not overstate the case: some designs produced by our own associations and institutes, whose existence we never suspected before because they were part of the military-industrial complex, "closed drawers" as they were, surprised and impressed many representatives of foreign companies with their quality. If only these designs had received broad industrial application in our own country by now!

The ideas heard at the seminars are forcing us to re-examine in a fundamental way our entrenched views on many problems of environmental protection work.

Take, for example, the treatment of waste water. The usual opinion is that a city's growth inevitably brings with it an expansion of the system of treatment facilities. The emergence of new technologies decisively refutes this traditional view: they even make it possible to decrease the capacity of new systems in comparison with existing ones. The significance of this is enormous. After all, the larger the facility in terms of the amount of water being treated, the larger the quantity of effluent being discharged into a body of water. Although these wastes have been treated, nonetheless, in one way or another

they influence the composition of the water: the oxygen content is reduced, bottom deposits are accumulated, the biological activity of the body of water is diminished, and the self-cleaning processes are disturbed.

As an example, one can cite the Narva Municipal Treatment Facilities, which were built in the 70's and expanded in the 80's. Designed to handle 70,000 cubic meters per day, today they handle up to 120,000. Their three sludge collectors give off such a stench that they make life in the adjacent neighborhoods completely unbearable. The lack of localized treatment for waste water at enterprises means that when these wastes enter municipal treatment facilities, they contain nearly half of Mendeleev's periodic table of the elements. As they settle in the sludge collector, these elements threaten everything alive in the area and pose gigantic problems for the city.

These problems are intensified as well by the fact that serious mistakes were made during construction of the treatment facilities. As a result, the reinforced concrete is disintegrating in a serious way. According to the conclusion of specialists from the All-Union Scientific Research Institute of Hydraulic Engineering imeni Vedeneyev, the facilities are in a disastrous condition, and they have only three-five years of life left.

At present, planning for a new treatment facility with a capacity of 140,000 cubic meters per day is taking place. Is such a giant necessary? It would seem not. It is essential to take the path that the civilized countries have taken: everything that can pollute nature must be removed by the one who produces this "dirt." For this reason, it is my opinion that an impact assessment is required to determine the advisability of building such a large treatment facility in the city.

We continue to display a wasteful, spendthrift attitude toward water resources, a poor practice which was halted a long time ago in the Western countries as a result of the adoption of strict legislative acts and their rigorous enforcement. The experience of these countries suggests to us effective ways to resolve the problems of wasteful water-resource utilization, which is growing worse before our very eyes. Here are the ways: develop strict legislation and efficient norms, raise the fee for water, raise the minimum fee for the treatment of wastes at municipal treatment facilities, and establish a differentiated fee schedule for waste-water treatment that depends on its harmful-substance content.

The adoption of the first two points of this program are the prerogative of the supreme authority of the republic, while the third and fourth come under the jurisdiction of local organs (see the law on local self-government).

Once we have started down this path, we will be able to force enterprises to meet the new requirements when they build and renovate their own local treatment facilities in order to ensure that treated water is used many times for manufacturing needs.

There is no doubt that the necessity to reduce water consumption in daily life must become axiomatic. At present a fee is levied for the taps which are installed in apartments, but not for the water which flows out of them. It is clear that water-consumption meters must be installed in every apartment. At present the average water consumption for every resident of Narva is about 265 liters per day. And the city is building another extension of the water supply line, which will raise this figure to 400 liters! Is that not waste?

After the Finnish group had visited the Baltic GRES [State Regional Electric Power Station], its leader, Orli Oyala, noted in passing at the seminar that he had never before seen an energy enterprise with such primitive technology. He illustrated his idea with data on the large sulfur dioxide emissions from the plant's smokestacks, emissions from which Finland suffers. And sulfur dioxide is, above all, acid rain. It is true that it does not threaten us thanks to the abundant emissions of slaty ash from the GRES smokestacks. At one of the meetings I. Epik, academician of the Estonian Republic's Academy of Sciences, said: "It is possible that acid rain falls far away due to the slow course of the reaction. According to some data, Estonia gets 17 percent of the pollutants, Finland gets two percent, and the Leningrad and Novgorod Oblasts receive 61 percent." To a specific question on how to work together to reduce the amount of Soviet sulfur dioxide coming into Finland, Mr. O. Oyala answered briefly: "Install equipment to trap the sulfur."

As we see, the opinion of an official from Finland's Environmental Protection Ministry is in line with the basic provisions of the republic's draft energy program, which has already been the subject of discussion several times—in Narva, in Kokhtla-Yarva and in Tallinn.

In general this program, with the exception of certain successful parts, leaves an impression of something indefinite and nonspecific; this was noted more than once in the course of the discussions about it. For such a serious piece of work involving a large group of scientists arguments of the "if it succeeds, it it does not" type are hardly acceptable. After all, these proposals concern the developmental prospects for the one of the main branches of the republic's economy in the next 25-30 years.

Here are examples. The program calls for the production of electrical power to be concentrated at the Estonian GRES, taking note of estimates that the existing equipment will last until 2005-2010. After that time, attempts can be made to update it if by then the republic has learned how "to produce the equipment and materials (boilers, fittings, regulating and measuring devices) locally." And if it has not learned how?

Undoubtedly the best option for the city of Narva is to renovate the Baltic GRES, which would include converting it to gas, mainly to meet central the need for central heating. But during the discussion of this issue

Academician A. Ots, department head at the TTU [Tallinn Technical School?] said: "If they give it to us" (the gas, that is). Who will give it? I hope that in the coming years Estonia will shift to a market economy and will not be forced to obtain gas with funds distributed by Gosplan. That is, gas can be bought on the free market, there would be funds. By the way, from the program it is not at all clear whether anybody has calculated which is more beneficial, to put a gas stove in a kitchen or to replace it with an electrical one and make the kitchen ecologically clean, while burning gas at the electric power station and making the station safe for the environment.

And what is the situation in our republic with regard to heat pumps, which provide alternatives for obtaining heat? One can ask: "what is the situation?" many times while studying the draft of the energy plan.

One can only welcome the decision by the republic's leadership, which rejected what is in our view a completely unacceptable proposal by 88 specialists to build an atomic power plant in Estonia. At a time when the Swiss—under the influence of the Chernobyl catastrophe—have rejected atomic power in a referendum, when its prestige in the world is falling dramatically, it is in all probability pointless to talk about building an atomic power plant in our small republic. And the government's decision has convincingly confirmed this.

For many people the following question is almost shocking: in general, do we need to increase the production of electrical energy? In one of his works N. Shmelev cites the following data: "The energy intensiveness of our national income is nearly 1.5-fold greater than in a majority of Western countries, while the introduction of advanced energy-conserving technology would yield the same effect—but at a cost which is three-four-fold cheaper—as drilling oil wells." After all, through the application of new energy-saving technologies Japan managed to reduce the energy-intensiveness of its production by 78 percent, the United States achieved a 33-percent reduction and Sweden a 20-percent reduction.

There it is, the most effective way to develop power engineering, the way which would make it possible to remove a colossal burden from nature and which would lead to significant improvement in the environment of our habitation.

#### **Estonian Environment Minister Comments on Republic Concerns**

91WN0216B Tallinn SOVETSKAYA ESTONIYA  
in Russian 2 Dec 90 p 3

[Interview by G. Golub with Toomas Frey, environment minister of the Estonian Republic: "In Order To Protect Nature You have To Pay for It"]

[Text] [Golubov] I do not think that it is necessary to begin our conversation by stating that the condition of the republic's environment is, to put it mildly, serious.



This has been discussed and written about quite a lot, while the residents of certain regions know from their own experience the cost of air and water pollution.

Now, aside from this problem, there had been talk about the possibility of selling Estonia's natural resources, which you are supposedly quite willing to do in order to obtain hard currency.

[Frey] That is what it is—talk. And above all about phosphorites. The situation is this. Recently the Economic Council of the republic's government discussed the situation with regard to mineral fertilizers. We have enough phosphorus and nitrogen fertilizers for our own needs; it is only potassium that we lack. But intensive land cultivation with today's "Yuko" spreaders, which are already being made in Valga, definitely requires comprehensive granulated fertilizers. They are applied to the earth in a localized way, which significantly reduces the amount consumed as well as the harmful consequences. Even now, after all, most of the fertilizers which are applied end up being washed away, poisoning the water. The production and application of tricalcic phosphate which, as is well known, did not dissolve, but only contaminated the soil, has been rejected altogether.

[Golub] And what about the phosphorites being worked in Toolsa?

[Frey] On this subject the Supreme Soviet expressed itself unequivocally in one of its first decisions: do not touch it. And the decision remains in force. The government simply does not have the right to raise the question of mining.

[Golub] And what is the situation with shale?

[Frey] It is largely determined by the energy situation. The program for this very important sector has not been determined once and for all. But I consider the main point to be that so far we have said no to atomic power. At least for the next 15-20 years.

But the extraction of shale—a primary form of power-generating fuel will also be reduced (from 23 million tons in 1989 to 15 million tons in 1995). According to international agreements we must reduce our sulfur emissions by 30 percent, and this means we must reduce by the same percentage the amount of shale which we burn.

[Golub] Does this mean that there will not be any new mines? And we do not need to worry about the area surrounding Kuremyae, where they were planning on building another mine?

[Frey] I hope so. But I am not certain. We have a serious opponent—the Estonslanets Association. For now we have agreed that the planning of a new mine (in exactly which spot we do not know) will not stop, especially since it is not being done at our expense. The formulation of the plan will take five years. And then we will see.

At the present time it was more important to halt the construction of the atomic power plant, which we have done.

[Golub] Since we are already on the subject of the shale basin, tell me, how satisfied can we be by the level of recultivation for worked lands?

[Frey] Of course, it is difficult to be satisfied with the overall picture. You probably have seen the lunar landscapes of our Northeast. Estonslanets is carrying out recultivation work. It would be naive to expect that in a year it will correct what has taken decades to accumulate. But we require new quarries to return worked hectares in a form suitable for recultivation. And the rest is up to the foresters.

Nine thousand hectares have been damaged; 7,000 have been recultivated, and on a majority of them biological recultivation has been carried out, that is, trees are growing. The quality of the work being carried out is good—at the level of Eastern Europe, one could say. But of course, landscape architects are needed. At present the Ida-Virumaaskiy District is dealing with these issues.

[Golub] Estonia has another resource—wood. And it has now become much more expensive—at the initiative of your ministry.

[Frey] We have refused the 35-million ruble subsidy which forestry received from the state. (Incidentally, this money will go to buy mixed feed). It is absurd to pay a subsidy for what should bring a profit, as it does everywhere else in the world. Add it up yourself, does it make sense for a cubic meter of timber to cost 3 rubles and 50 kopecks? After all, think what it costs just to plant and grow it! And what is 3.50 today? Even the new price of 24 rubles per cubic meter does not bring it up to normal prices on the world market: they are seven-fold higher.

[Golub] Does that mean that building materials and furniture will become more expensive?

[Frey] This should not have a strong impact on furniture because only one percent of timber goes for that purpose. The cost of furniture depends largely on costs for labor as well as varnish, stain, and other materials. But building materials will become more expensive, there is no getting around it. On the black market a cubic meter of wood already costs nearly R500.

[Golub] Does the republic have enough wood of its own? And is the cutting of it not leading to the destruction of the forests?

[Frey] I will cite two figures for comparison: every year we cut 3.5 million cubic meters, and we bring in 200,000 cubic meters, especially hard woods for ski factories. The cutting does not harm the forest stand because the amount depends strictly on growth. Our forestry plan contains an exact picture of what grows where throughout the republic. In fact, we cut 100-year growth; moreover, this does not effect protected areas. After all, we distinguish three types of forests: income forest;

defensive forest, which grows along river banks, highways and the sea; and protected forest (nature reserves, wildlife sanctuaries, national parks, etc.).

[Golub] We probably should not conclude our conversation without saying a word about environmental pollution.

[Frey] In general, the ecological situation has not changed for the worse in a year, if one does not count the disasters in the Tapa region. Nor is there yet any noticeable improvement. In Tallinn, for example, the treatment facilities are operating at 10-times their capacity; at any minute we might have to pay in hard currency for the untreated wastes going into the sea.

I do not think there will be any general improvement until we force the guilty parties to pay for environmental pollution. Starting in January a special tax on harmful discharges will be introduced. The pulp and paper combine, for example, will have to pay R7 million rubles per year. And we must not fear that some enterprises will not be able to tolerate such a heavy tax burden. It is necessary to be consistent in our decisions. Nature cannot be saved if we do not pay for it, if we leave everything as it was—owned in common, that is, with no owner.

### Odessa Holds Referendum on Closure of Port Chemical Works

#### Referendum Results

91WN0215A Moscow TRUD in Russian 20 Dec 90 p 1

[Article by D. Romanov: "Odessa Referendum"; first paragraph is source introduction]

[Text] Yesterday the results of the referendum held in Odessa were summed up. The city's residents had to determine their attitude toward two problems: the creation of a free economic zone and the port plant which produces ammonia.

There were some doubts about how inclined to participate the Odessa residents would be: people were pretty tired of the endless elections and by-elections. But this time about 60 percent of the eligible citizens turned up at the polling stations. Ninety-three percent of those who participated in the referendum voted in favor of creating the free economic zone. And that is not surprising: the memory of the "free city" that Odessa once was has been passed from generation to generation. And every schoolchild knows the term "porto-franco." It can even be said that a step, however small and tentative, toward reviving its ancient status has been made. Komsomol Street, which rings the old city and served in ancient times as the boundary of porto-franco, has been given back its old name—Staroportofrankovskaya Street.

Eighty-three percent of the citizens voted in favor of closing the port plant.

#### Political Aspects Examined

91WN0215B Kiev RABOCHAYA GAZETA in Russian  
22 Dec 90 p 1

[Article by V. Kreshchuk, RABOCHAYA GAZETA correspondent, Odessa: "Running in Place: Reflections on the Referendum Held in Odessa"]

[Text] A long time ago, during the stagnant period, Vladimir Vysotskiy satirized those who loved to run on the spot. However, the number of people who wish to imitate motion has not declined during the years of perestroika. A referendum was held in Odessa on 16 December. The idea to hold it was accepted at a session of the city soviet. Originally it was proposed as a way to clarify the attitude of Odessites to the dangerous production units at the port plant (OPZ). However, when they learned that satisfying their curiosity would cost the city nearly 1.5 million rubles, they decided to add on another question—about the opening of a free economic zone in Odessa.

It should be noted that the preparatory work for the referendum was carried out in an obviously unsatisfactory way. In many of the mass media the state of affairs at this modern production unit of the port plant, which meets world standards in terms of technology and safety, was covered in a one-sided manner.

"You understand, I get the impression that the referendum was thought up in order to distract people from more serious problems," noted one of the scientists from the university.

"All you hear is talk about the danger arising from the port plant. But very few people actually understand the extent of the danger. Incidentally, there is a more serious problem, and that involves drinking water. It is still not known how matters will stand with regard to the port plant. But we consume the water from the Dnestr every day, and it is obviously not of good quality. The accident which took place seven years ago at the Stebnikskiy Potassium Plant made a "worthy contribution" to this. Moreover, other industrial and agricultural enterprises and organizations regularly poison the water with their discharges. On 30 November of the current year I. Lyakh, the chief state inspector for environmental protection of the UkSSR State Committee, signed an order in accordance with which the Stebnikskiy Plant began a measured discharge of brine into the Dnestr from its overfull storage tanks. That is what our attention should be focused on. But how many enterprises in the region ignore the positive experience of the OPZ and discharge untreated wastes into the sea and poison the air? The resolution of these problems should be given top priority.

On the day of the referendum it came out in conversations with citizens at polling places that some of them

have only an extremely vague notion of what the free-city status will mean to Odessa, and others thought that the preparation for opening a free economic zone was obviously insufficient.

"I am for closing the dangerous production units of the port plant and against the free economic zone," said Lyudmila Shapovalova, a member of the Green Party and tallyman for the Black Sea Shipping Company Transflot Service. I do not think it is necessary to explain why am I against harmful production units, but neither am I pleased by the Odessites' transition to a market economy in the form of a free economic zone. After all, the introduction of favorable conditions for free enterprise and the conversion of state enterprises to a joint-stock or cooperative basis requires special measures for the social protection of workers, the unemployed, pensioners, large families and invalids. Toward this end good protection—with a legal basis—must be worked out.

"And when you vote, Aleksandr Grigoryevich, is it unlikely that you will have any doubts about your attitude toward the port plant?" I asked chairman of the OPZ labor collective soviet, A.G. Dronov.

"Such questions are not decided by a referendum," said A. Dronov. Strange that the fate of an enterprise depends on people who do not know it at all. We have held meetings and rallies in the shops. The workers voted not to take part in the referendum.

And so the referendum took place. As expected, a majority of the Odessites voted for closing the dangerous production units at the OPZ and for the establishment of a free economic zone in the city. It is true that the OPZ workers who monitored the voting uncovered a large number of various violations. Frequently one Odessite voted for two, three or more people. After all, we have not yet eliminated "collectivism" among us. At present the OPZ representatives are attempting to present their claims on referendum irregularities to the city soviet. But it seems they can hardly get a hearing.

At a meeting with deputies of the city soviet, Mackie Skinner, an American expert, was asked whether he knew of any instances in which chemical production units had been closed down on the basis of a referendum.

"I cannot remember any," answered M. Skinner. However, when enterprises are being built, much depends on the decision of the local residents and authorities. And at existing ones, if claims are made, the case is usually limited to measures to improve the ecological state of the enterprise and to improve the reliability and security of its operations.

And what is to be done now with the opinion of the participants in the Odessa referendum?

"You understand that our referendum has no legislative basis," said L.A. Chernega, deputy chairman of the city soviet. It is advisory in nature. When the republic's

Council of Ministers comes to decide the question of opening a free economic zone in Odessa, no one will be able to make the accusation that only a small group of people is fighting for free status. The referendum decision will also help in the future struggle against the State Agrochemical Association.

"A definite distortion has taken place among us here with regard to the port plant," noted V.A. Ilin, deputy chairman of the city soviet. For a long time the press stressed the fears about a possible accident. And only in the last days before the referendum was there brief mention of the plant's benefit to the city. As an engineer I think that in terms of its technology and operational safety the OPZ is actually quite good. Especially since measures have already been set out to speed up the introduction of an automated system for monitoring and controlling the manufacturing processes.

On the eve of the referendum the president of the country issued two ukases dictated by the difficult economic and political situation. The first of these is devoted to the special conditions for the expenditure of hard currency in 1991 and, in accordance with it, the city and oblast will receive extremely small hard-currency payments from the OPZ. The second ukase repeals all decisions by the local organs of power which violate economic relations for 1991. However, even under these conditions, the plant is trying to do everything in its power to resolve the city's problems.

After the referendum I had occasion to meet representatives of foreign companies at the OPZ. They had come to work on issues related to constructing a transportation bypass in the Kotovskiy neighborhood, building an emergency hospital and large hotel complex, as well as increasing the capacities for treating and preparing the drinking water supplied to the city. The port plant will use fertilizer to pay for all this work.

But the city soviet is fighting. And it is not clear why: possibly to create the appearance of furious work? At the moment the most preferable position seems to be that of one of the republic's people's deputies, who decided to ask the country's government to establish for the OPZ—while taking into account the difficult ecological situation in the region—a beneficial, more substantial system of payments to the local budget. One would hope that in Moscow they will pay attention to the voice of the people's deputy.

#### **Fears About Radiation Levels in Sochi 'Seem Unfounded'**

*PM2702145191 Moscow Central Television Vostok Program and Orbita Networks in Russian 1530 GMT 22 Feb 91*

[From the "Vremya" newscast: Report by V. Glukhovtsev, V. Lazarevskiy, identified by caption, from Sochi]

[Text] [Announcer] Although six years have passed since the accident at the Chernobyl Nuclear Electric Power

Station [AES], new patches of radioactive contamination are still being discovered in the country.

[Glukhovtsev] Alarming rumors about radioactive fallout within the resort area began to circulate in Sochi during the first few days after the Chernobyl tragedy. However, these rumors were never confirmed or denied. It was not a question of anyone trying to suppress this information. In Sochi, just like in several other cities, there was simply no equipment to measure radiation levels.

This became possible only after the "Geologorazvedka" Concern's Koltsovskaya prospecting and surveying expedition attended to this matter. As a result, 400 radioactive patches were discovered in Sochi. This year this figure rose to more than 1,000.

Naturally, the first question is—what danger do these patches present to people's lives?

[Yu.N. Mochalov, subsequently identified as technical director of radio-ecological operations] Despite the seemingly large number of these patches, the patches themselves do not pose any significant threat to people's lives in view of their small size—up to one square meter—and the relatively insignificant radiation levels—between 60 to 120 microroentgens per hour.

[Glukhovtsev] Why is this patch precisely here?

[Mochalov] This is because the fallout has been washed down by rain to precisely this spot as a result of the runoff.

[Glukhovtsev] This work is in progress now. Have you any idea when it will be completed?

[Mochalov] This work is essentially drawing to a close in the central area. I believe that this work will be finished in a month at most.

[Glukhovtsev] And so the fears of the local population and of would-be tourists wanting to come to Sochi for their vacations—fears evoked by articles published in the central press about the ecological situation in the resort area—seem unfounded. In addition to the removal of the patches, the city authorities have taken steps to protect the ecological situation in the future.

[P.I. Yefremov, chief of Sochi Civil Defense General Staff, identified by caption] At the beginning of the current year the city acquired several different instruments to measure radiation levels, including the kind of instruments in the possession of the ecological detachment.

### 'Ecologically Harmful' Nairit Plant To Reopen in Yerevan

PM1302155391 Moscow Central Television First Program Network in Russian 1800 GMT 12 Feb 91

[From the "Vremya" newscast: Report by V. Nazaryan, identified by caption]

[Text] [Announcer] And now we want to take you back to an event which occurred a year ago. Perhaps you remember the veritable wave of righteous indignation which was raised among the inhabitants of Yerevan over the ecologically harmful Nairit chemical giant. It was closed. And now there is a new decision.

[Nazaryan] How many arguments there were around Nairit both before and after its closure. On the one hand the extraordinary ecological danger of this chemical giant situated in the very center of Yerevan, with its population of 1.5 million. On the other hand, its enormous economical importance. After all Nairit is the country's only producer of chloroprene rubbers and latexes, the need for which in the national economy is difficult to overestimate. However that may be a year ago the scales tipped in favor of people's health. Nairit was brought to a standstill. And suddenly there appeared the unexpected, even contradictory decision of the republic's new government to recommission the association. And here are the reasons: Nairit is not simply an enterprise, albeit a harmful one, but also a national resource capable of bringing in hard currency profits of many millions and for Armenia that is no longer an economic but a political issue, particularly now under the conditions of resurgent independence. Parliament debated the fate of Nairit for exactly a week. The question of whether or not it should exist was also decided at the association itself, where the deputies met with the public and with representatives of the 6,000-strong labor collective. As you can see [film shows board giving results of the vote, in Armenian], opinions were again divided and nonetheless a compromise was found. A resolution of the Armenian Supreme Soviet has authorized the commissioning of a number of Nairit's auxiliary production facilities. As for the most harmful rubber and latex facilities, then the question of opening them has been postponed for two months. So that whether or not Nairit will exist in full is still a question.

### Army Unit Fuel Leak Contaminates Arctic Settlement Water Supply

LD1702223191 Moscow Domestic Service in Russian 2200 GMT 17 Feb 91

[Text] A warning note: Mayak has already reported that a spillage of diesel fuel on the ice of a lake which supplies fresh water for northern people has taken place at Amderma, an Arctic settlement on the shores of the Kara Sea. This is what our correspondent was told by Vasily Afanasyevich Sysoyev, head of the Arkhangelsk Environmental Protection Committee. A small military unit established a fuel storage facility 12 km away from the



port settlement and 30 meters away from the lake, which is the sole source of drinking water. A fuel leak was noticed in December last year, but only now have they started to deal with it in a proper way, as a result experts put the damage done to the area at about 3 million rubles.

With the assistance of the military procuracy, the Committee intends to apply penalty sanctions against the command of the unit. In addition, the northern people intend to demand that the servicemen collect the ice and snow which has been soaked in fuel and remove it to a safe place.

### More on Arctic Lake Fuel Spill

LD2002152191 Moscow Domestic Service in Russian  
2330 GMT 19 Feb 91

[Text] As we have already reported, several dozen tonnes of diesel fuel were spilled on the ice of a lake from which drinking water is taken, in the Arctic settlement of Amderma, because of the negligence of the military.

The Arkhangelsk Committee for Environmental Protection has forced the military to start cleaning up the accident.

As our correspondent, head of the maritime expedition, Captain Belousov, was told: The military is collecting the polluted snow from the surface of the lake. Sawing out bars of ice permeated with diesel fuel has begun. There is so much of it that the ice burns if it is lit. Both the ice and the snow will be taken to a canyon from which there is no water drainage. The remnants of the diesel fuel will be buried there.

Meanwhile, the investigation of the causes of the accident continues. The military department will have to pay for the damage caused.

### Reported Dioxin Pollution Levels in Ufa Causing 'Shock'

PM2602100891 Moscow KOMSOMOLSKAYA  
PRAVDA in Russian 21 Feb 91 p 2

[Correspondent G. Agisheva report: "Ufa in Shock"]

[Text] The people of Ufa are in shock. Staggering information about the dioxin pollution of the city has been made public. Dioxin is carcinogenic, damages the genetic code and leads to malformed offspring, depressed fertility, and sterility, lowers the organism's resistance to diseases, and causes technogenic AIDS. And what is particularly frightening is that it is a genetic poison, the curse of many future generations.

As is clear from reports of the city soviet ecological commission on the results of the test of Ufa's water which were made at the time of the phenol accident in the spring, dioxins were discovered in frightening quantities in all the samples that were sent for analysis. But three days earlier the USSR Council of Ministers State

Commission had lifted all restrictions on the use of drinking water in the southern part of the city, and had guaranteed the absence of harmful additives in the water. As we now know, we were recommended to drink water that was greatly in excess—between 50,000 and 147,000 times—of the maximum permissible concentration of dioxin isomers.

However, one of the dioxin sources—the Khimprom Production Association's vat residues annealing furnace—is still in operation today; the noncombustible products of these residues are still dispersing dioxins over a large section of the city. It is not surprising that the frequency with which people fall ill with cancer in Ufa today is more than twice what it was in 1960. The incidence of bronchial asthma among our children is five to six times greater than 15 years ago, that of anemia is two or three times as great, and the incidence of chronic cholecystitis has increased one and a half times.

The city soviet deputies are demanding that Ufa City be declared an ecological disaster zone. They are appealing to union departments for help, and to the WHO. They think that those who are to blame for the deliberate distortion of information about the state of the "drinking" water should be brought to book. A telegram to this effect has been dispatched to the president and the Supreme Soviet of the country.

### Chelyabinsk Marchers Protest Nuclear Power Plant

LD2402225191 Moscow TASS in English 2203 GMT  
24 Feb 91

[By TASS correspondent Yevgeniy Tkachenko]

[Text] Chelyabinsk February 25 TASS—Inhabitants of Chelyabinsk in the South Urals staged a march here on Sunday to protest the building of a nuclear power plant in the area.

The march, organized by local Green Association activists, was followed by public hearings on the advisability of building a nuclear power plant near the Mayak Chemical Plant, the first Soviet nuclear industrial installation.

Most speakers noted with alarm that the area has become a hazardous, and even unique storage facility of radioactive elements, without parallel in the world.

Technical reservoirs and lakes, whose level is constantly rising, contain more than 400 million cubic meters of liquid contaminated with radionuclides.

Specialists have suggested building a nuclear power plant here in order to evaporise [as received] masses of water and stabilise the level in reservoirs and lakes. Deputies to the regional council welcomed the proposal.

However, the Green Association radically opposed this approach to the solution of an acute ecological problem. It was supported by other movements and masses of inhabitants. They adopted an address to Russian Prime

Minister Ivan Silayev on this score. The address says that 300,000 people have already signed the demand to ban the building of a nuclear power plant in the area and revoke the decision by the regional council about the possible resumption of construction works.

### **Threat of 'Ecological Disaster' in Northern Tyumen Oblast**

PM1502095791 Moscow IZVESTIYA in Russian  
12 Feb 91 Union Edition p 3

[SIBINFORM report: "Northern Tyumen Threatened With Disaster"]

[Text] Scientists from Kharkov University have carried out an ecological investigation in the north of Tyumen Oblast. On the order of the Purovskiy Rayon Soviet Executive Committee, they are drawing up a kind of medical atlas of the extensive territory. Background contamination was found in settlements near the Pur River and its tributaries, and background radiation and the presence of trace elements were discovered in the soil and water. The ecological situation is not the same in all areas—in Noyabrsk a significant quantity of harmful waste is absorbed by the vegetation. But in Novyy Urengoy it is almost a question of an ecological disaster, SIBINFORM reports.

### **USSR Supreme Soviet Adopts Decree on Aral Sea**

LD0103214791 Moscow TASS in English 2132 GMT  
1 Mar 91

[By TASS parliamentary correspondent Ivan Ivanov]

[Text] Moscow March 2 TASS—The Soviet parliament proclaimed as an all-Union task that of improving the hygienic and epidemiological conditions of the population's life, the social and ecological situation in districts adjoining the Aral Sea.

Speaking in parliament, Kakimbek Salykov, chairman of the parliamentary Committee on Ecology, described the Aral problem as the biggest ecological catastrophe on the globe and said that the ecological situation in the region got out of control. He said that an emergency situation has formed in the Aral area in every sphere of life, that the living conditions and health of the population are rapidly deteriorating and that the population's death rate and infant mortality increased.

Salykov said that 70-80 percent of the population in the Aral area suffer from various diseases. The sea is no longer a source of fish. The climate in the region is rapidly worsening. The salt is swept from the dried-up seabed in increasing amounts and settles on the region.

Vitaliy Doguzhiyev, USSR first deputy prime minister, said that the Aral disaster is a result of a profound crisis of the regional economy. He said that the concentration

of efforts on saving the Aral Sea, while the entire region is in a grave ecological and economic state, is doomed to failure.

The parliamentary decree suggests to draft an appeal to the world community to set up an international foundation for the restoration of the Aral Sea.

### **Kamchatka Adds Environmental Question to Referendum**

LD2502101291 Moscow TASS in English 0959 GMT  
25 Feb 91

[By TASS correspondent Sergey Borovkov]

[Text] Petropavlovsk Kamchatskiy February 25 TASS—Residents of the Kamchatka Peninsula will have to decide on the future of both the Soviet Union and their own region in a referendum on March 17.

Communist Party secretaries from Petropavlovsk-Kamchatskiy have called on the regional governing council to put one more item on the list of questions to be answered during the referendum.

Residents will have to answer the question: "Do you support an appeal to the USSR Supreme Soviet to restrict entry to Kamchatka to help conserve the environment?"

The Soviet Government's decision to open up Kamchatka, previously off-limits to non-residents, provoked a row among the local population who launched letter and telegram attacks on newspapers and governing councils.

Since Kamchatka fully depends on the mainland's food-stuff supplies, it is unwilling to open its doors for mass tourism, which can also damage its fragile nature.

If the population votes in favour of the appeal, the local authorities will have a strong motive to urge the central government to reconsider its resolution.

### **Chukotka Radar Stations Said To Pose Health Hazard**

LD1402122991 Moscow Central Television First  
Program Network in Russian 0900 GMT 14 Feb 91

[From the "Television News Service" program, presented by Tatyana Mitkova]

[Text] [Unidentified correspondent] These radar installations made their appearance extremely close to the coastal settlements in Chukotka's Beringovskiy Rayon long ago, at a time when the all-powerful military department did not particularly bother to seek out a location for its installations and certainly had no interest in the opinion of the population that it was preparing to reliably defend. [video shows middle-distance views of two or three tracking installations in a snowy haze, interspersed with views of nearby civilian life]

Years passed, and it turned out that this same population—in this case, the inhabitants of settlements—was receiving powerful doses of electromagnetic irradiation from the operating radar installations. According to an expedition from the Far Eastern University, which carried out an investigation here, the maximum permitted norm for this irradiation was being exceeded 7-9 times over. Scientists precisely connect with this the sharp increase in oncological disorders in the rayon in recent years. Naturally, people did not wish to remain such hostages to national defense.

[Unidentified speaker] The commission has ended its work, clearly acknowledging that installations that affect the health of the population of an inhabited locality must be resited.

[Correspondent] Incidentally, that will not happen immediately. For the time being, it has been decided that the radar installations will operate in a mode that is harmless to people.

### Global Ecological Strategy Seen Evolving From Historical Lessons

AU2102060091 Moscow OBSHCHESTVENNYE  
NAUKI in Russian No 6, Nov-Dec 90 pp 160-169

[Article by Viktor A. Los, doctor of philosophical sciences, professor at the USSR Academy of Sciences Philosophy Department; specialist in the area of philosophical aspects of global problems; author of a number of publications on ecological problems: "The Last Chance"]

[Text] It has taken mankind quite a long time to realize the impending ecological catastrophe. In the sixties, the first pages of a modern "history of the ecological ailment" afflicting civilization were written; in the seventies, the specific relationship between society and nature under the conditions of scientific-technological progress began to be understood; in the eighties, tactics were elaborated for mitigating the socioecological situation and quelling acute local and regional "biospheric fires"; it was also at that time that a global ecological strategy was outlined. Now, in the nineties, in order to survive ecologically and socially, mankind must begin to actively implement a single global strategy for nature conservation and rational utilization of natural resources, a strategy which will take care of the quality of the environment for the civilization of the 21st century. I would like to share with the readers some of my thoughts on possible theoretical principles of this strategy.

### The Failure of 'Ideological' Ecology

A paradoxical situation has taken shape: As though social consciousness has turned out to be hypnotized by the imminence of an impending global *ecological crisis*—the boa constrictor gradually devouring the helpless "technocratic civilization." The scope of biospheric pollution (millions of metric tons of various materials are being dumped, millions of hectares of forests are being

felled, and so forth) is regarded as something abstract and no longer affects the consciousness of the individual.

The realization of the fact that ecological contradictions are global in character must not "take off the agenda" an understanding of the regional and local features of their manifestation. One cannot count on resolving the worldwide ecological problem, unless its specific manifestations in industrially developed regions, "Third World" countries, or the countries of Eastern Europe, including the USSR, are taken into account.

It is precisely in the countries of Eastern Europe and in the USSR that the acute and, perhaps, even critical character of the current socioecological situation has manifested itself in the nineties. However, some reputable publications continue reiterating past stereotypes in accordance with which "a genuine resolution of the contradictions between man and nature is only possible under the conditions of socialism." (Footnote 1: "The Global Ecological Problem". Moscow, 1988, p 138.) Engels, reflecting upon the ecological processes of "market capitalism," assumed that a "total revolution" in the existing mode of production and social system, that is to say the formation of socialism, having established a "harmonious functioning of its productive forces in accordance with a single general plan..." will eliminate the "present poisoning of the air, water, and soil." (Footnote 2: K. Marx and F. Engels, "Works", Vol. 20, pp 307-308.) Unfortunately, the ecological predictions of Marxism have not been confirmed by the experience of real-life socialism.

The revolutionary transformations in European socialist countries have revealed spheres that were previously inaccessible to objective analysis. It has turned out that real-life socialism offers no particular advantages in overcoming socioecological contradictions. Moreover, it is precisely under the conditions of "developed socialism" that areas of *ecological disaster* have been registered, *ecological refugees* have appeared, and so forth. This is a result of the economic management by the administrative command system of government, a system that never took account of the socioecological principles of development.

In the process of absolutizing Stalin's ideas of the role of the geographical environment in the development of society, "geographical indeterminism" was proclaimed in accordance with which production-economic activity was assigned a leading role, whereas nature was only regarded as part of the resources. An active process of conquering nature took place under the slogan to the effect that "We cannot wait for favors from nature." It is difficult to find a period in our country's history during which ecological considerations would not have been pushed to the background by the requirements of production. For this reason, the socioecological situation in the country which took shape by the nineties can hardly be regarded as unexpected. A characteristic feature of this situation lies in the fact that, first, the "epoch of glasnost" has revealed, in all its acuteness and scope, the

crisis character of the interrelations between man and the biosphere. Second, the existing production-economic mechanism and the social structures that are taking shape are still unable—in the conditions of general commodity shortages—to trigger the “biosphere-oriented” mechanism of development.

A similar situation is typical of the majority of those countries that, until quite recently, have been reckoned as belonging to the socialist camp, because the revolutionary transformations within them taking place against the background of economic, political, social, or national cataclysms, are leaving little hope for a fast resolution of ecological contradictions. In this sense, some of them, including our own state, must be looked upon as zones of dangerous *ecological tension*, even more dangerous than is typical of “Third World” countries.

The point is that developing regions had the courage to admit their *ecological insolvency* much earlier. As far back as in the seventies, the leaders of the majority of them shut their eyes to the reality of the national *biospheric contradictions*, staked on a scientific and technological leap forward, and strived to reduce the differential between the developing and advanced countries. However, in the eighties, having failed to fulfill their regional programs for development, nearly all of them acknowledged the hazardous character of the degradational changes in the biosphere. Of course, the socioecological situation in the “Third World” is quite dramatic: The continued uncontrolled demographic explosion, the weakness of the scientific-technological and production-economic base, the need to “pay” for the pollutions created by the developed world, and so on. All this in no way contributes to the mitigation of the contradictions in the “man-biosphere” system.

However, the “Third World” countries are perfectly aware of their place in the dynamics of the world's historical development and do not “swallow” more than they can afford to. Many of them object to the Western style of modernization and strive to find such paths of development that would be in line with their own national traditions; they join regional and interregional efforts in the sphere of nature conservation and rational utilization of natural resources. However, we can hardly say that, by the beginning of the nineties, the “Third World” has managed to halt the slipping down into an *ecological crisis*. The activity of the “First World,” that is to say, of the industrially developed countries, accounts for a considerable part of the pollution in the developing regions. Notwithstanding this, a foundation was laid in the eighties for a purposeful orientation of the activity, and this must bear “ecological fruit” in the current decade.

The leading capitalist countries have already been reaping fruit, notwithstanding the fact that, in the seventies, many Western scientists believed that these countries were on the verge of an *ecological crisis*. It would suffice to remind the readers of the worldwide discussion around the report on the “Limits of Growth” (1972),

that was submitted to the Club of Rome, in order to bring out the whole depth of the expected biospheric crisis which, not infrequently, is compared to the “great depression” of the thirties. While the Marxists were busy “analyzing critically” the fundamental studies of Western researchers that dealt with the “crisis of traditional values,” the shortcomings of “one-dimensional man,” and other self-critical assessments of modern bourgeois civilization, the market mechanism began to actively elaborate theoretical principles of and then realize practically methods of survival under the changing socioecological circumstances.

First, the market has triggered mechanisms—legal, social, organizational, and others—guaranteeing a harmonious combination of economic and ecological principles of development. The measures which had been referred to as “shifting the costs of nature conservation upon the taxpayers,” in reality, enabled the consumer to obtain such commodities as the “ecologically clean automobile,” “clean” foodstuffs, and so forth, commodities that conformed to the growing biospheric awareness of civilization. The consumer conscientiously loosened his purse-strings to pay an additional *ecological tax*.

Second, when reality demands that certain social aims be attained, the market does not reject mechanisms of state regulation which might seem to be alien to its nature. In that case the market and state systems of management start working in unison: The legislation with regard to nature conservation improves (it is more advantageous, both economically and socially, for the entrepreneur to make a large *economic installment* than to go bankrupt on a legal basis), the corresponding state organs—ministries, nature conservation agencies, and so forth—start working more actively; such state-controlled organs were created in practically all developed and developing countries by the beginning of the eighties.

Third, the social movement in the West has always been a proponent of alternative concepts. Whereas in the seventies, the “Green” movement commenced its activity with flamboyant street processions and mass rallies that had direct biospheric orientation, today, this is a powerful political and social force which has been reckoned with in adopting significant state decisions.

In short, the *ecological crisis* predicted in industrially developed countries will hardly become a reality. Of course, the socioecological situation of the nineties is far from ideal. Nevertheless, if one regards the situation as a whole, the nature conservation policy, which is being pursued, not in words but in deeds, in developed capitalist countries, has led to a certain stabilization of the regional socioecological situation in the majority of them.

Thus, the awareness of the global character of the ecological problem constitutes a new element in the system of conventional values of modern civilization. Prior to the “Gorbachev Spring,” our official ideology regarded the very notion of universal human values as a deviation



from the principles and from the ideals of class struggle and as a "concession to the ideological adversary."

It is precisely for this reason that the "Russell-Einstein Manifesto" has only recently been published in our country. The authors of this manifesto, speaking as representatives of the "human race," called upon the people, as V. Vernadskiy (Footnote 3: V.I. Vernadskiy, "Philosophical Ideas of a Natural Scientist", Moscow, 1988, p 35.) also had much earlier, not only to think but also to act "in a new way" and on the "global scale." However, nothing that is common to all mankind exists outside the specific regional or local environment. The finding of the dialectical principles of the global and local does not, in any way, lower the status of universal human problems in the dynamics of world development but, conversely, by immersing them into social reality, it reveals their viability and enables us to get rid of old and new stereotypes of thinking.

#### Ecological Myths Must Be Repudiated

It is, perhaps, difficult to find any other periods in the history of modern civilizations during which stereotypes, which had "worked" quite successfully over many decades or even centuries, would have collapsed in such a revolutionary manner. Indeed, never before did mankind curse science so fervently and vehemently, at the same time awaiting from it the answer to all the accursed problems of existence. Let us specify a certain system of myths whose renunciation may bring about a relaxation of the socioecological tension in the world.

**The myth of man's domination over nature.** At the end of the sixth day God created man in His image and after His likeness, so that man would rule the entire earth and everything that lived and grew on earth. This is how the Biblical myth about man's divine creation and predestination emerged. The notion of man's "hegemony" with regard to nature was further reinforced during the Modern period of history.

The differential method of cognition has been gradually gaining foothold both in the philosophy and science of this epoch, whereas the period of Classical Antiquity and Renaissance used the integral method. The "separation" of nature into its component parts by means of the differential method of cognition and the domination of the mechanistic view of natural processes have been the most essential prerequisites of the subsequent progress of natural sciences. At the same time, absolutization of this type of notions within the framework of the metaphysical style of thinking has ultimately led to a strengthening of the trend toward contrasting man and nature. Whereas F. Bacon viewed man, among other things, as nature's "interpreter" and "servant," R. Descartes called upon man to become "master" and "ruler" of nature. The ideas of empiricism with its progressive slogan to the effect that "knowledge is power" and the ideas of rationalism, which strived to proceed from the principles

rejecting spontaneity and irrationality of both intellect and activity, matched the philosophy of Marxism quite organically.

Thus, Engels, when he drew the outlines of a socialist society, proceeded from the idea that, within the framework of this society, people would become "genuine and conscious masters of nature" and that this hegemony would produce exclusively positive results. How could it be otherwise? The laws of both history and nature will be understood, and this will rule out irrationalism and will open up the road toward the common weal.

This was in theory. However, the experience of socialist construction has turned nature into a "geographical environment," into a mere condition guaranteeing material life of society, and into an object of relentless manipulation and unrestricted consumption.

We will plow up the virgin soil of servile souls  
With the tractor of reason,  
And will arrange stars into rows,  
And will put a harness on the moon!

(V. Kirillov)

or  
For days and nights,  
For days and nights,  
Has the worker been fighting  
A battle against the Dnieper.

(S. Marshak)

The sincere belief that "nature is subject to people" (A. Bezymenskiy) assumed the form of the following iron stereotype: Whereas under the conditions of antagonistic socioeconomic formations, changes in the geographical environment obey spontaneous laws, under socialism, this environment is being used rationally, that is to say, for the first time in history, "human society has been conquering nature systematically and according to plan in the interests of society itself." (Footnote 4: I.I. Ivanov-Omskiy, "Historical Materialism on the Role of the Geographical Environment in the Development of Society", Moscow, 1950, p 12.)

Back in the sixties, Western theoreticians proceeded from the assumption that the technological and social structures ("industrial," "postindustrial," "technotronic" ["tekhnotronnoye"], and other societies) that were taking shape would overcome many, if not all, problems of modern civilization, as a result of rapid scientific-technological progress. Unfortunately, the systems that were proposed did not take proper account of the natural factor. However, quite soon—by the beginning of the seventies—man living during the epoch of global problems realized, with astonishment, how inevitable his dependence was upon the state of the biosphere.

The serious character of the socioecological situation that was taking shape in the world demanded that traditional anthropocentric illusions be abandoned for the sake of biological survival. In other words, man, in the process of his activity, must not only proceed from

the goals associated with satisfying his material or cultural needs, as well as his needs with regard to energy, but also take into account a possible transformation of the natural habitat.

We do not, by any means, advocate going back to the Protagorean principle according to which "Man is the measure of all things"; what is returning is the very spirit of the vision of the world, as was typical of Classical Antiquity, with its immanent union of man and nature. The "domination" of man over nature was a historical illusion; its overcoming presupposes turning to the real dialectic of the interrelationship between society and nature, a dialectic free from ideological dogmatism and social limitations.

**The myth of the inexhaustibility of nature.** At the turn of the 19th and 20th centuries, there was widespread belief that Russia was devoid of any appreciable natural resources and sometimes even "death due to the depletion of resources" was predicted for it. V. Lenin sarcastically ridiculed the critics of Marx for their theory of the declining fertility of soil, referring to it as a stupid tale which could be hissed off even by freshmen. On the eve of World War I, Lenin rejected the reality of a "world-wide oil hunger," blaming it on the activity of "oil magnates," those knights of capitalist profit. (Footnote 5: See V.I. Lenin. "Complete Works", Vol. 23, pp 32-35.)

J. Stalin, speaking at the first All-Union Conference of the Workers of Socialist Industry, admitted that the Soviet Union was by between 50 and 100 years behind advanced countries. "We must cover this distance in ten years. Either we do this, or we will be crushed." Listed among the most essential factors for resolving this problem were "sufficient" natural resources which, in his opinion, were "even more abundant than need be." Quoting N. Bukharin (the end of 1932), this radically changed "even the most general idea of what our country meant from the point of view of its "natural wealth." (Footnote 6: N.I. Bukharin. "Selected Works". Leningrad, 1988, p 355)

As far back as at the start of the century, K. Timiryazev was not so straightforward when he pondered over the question of whether it was true that mankind was threatened by an imminent death; D. Mendeleyev, in his "Cherished Thoughts" ["Zavetnyye Mysli"], speaking about Russia's inexhaustible natural riches, also saw quite significant difficulties which their extraction would involve. However, under the conditions of real-life socialism, no doubts were raised in this respect.

In the mid-twenties, L. Ramzin published data from which it followed that, based on the current annual growth in coal extraction, the world reserves of this fuel may be exhausted in 200 years; those of oil—in 100 years. A few years later he turned out to be among the main accused at the "Industrial Party [Prompartiya] Trial." His former colleagues characterized his assessments as "oracle discourses." (Footnote 7: I.M. Gubkin.

"Natural Riches of the USSR and Their Utilization". Moscow-Leningrad, 1931, p 13) (This is one of the mildest characterizations given at that time.) When, several decades later, biologists (A. Rode and I. Shmalgauzen) tried to scientifically analyze ideas regarding the "boundless character of the growth of crops yield" (V. Vilyams), ideological labels were immediately pinned upon them (for example, it was alleged that Rode's idea ruled out the possibility of increasing soil fertility under socialism), with subsequent "practical conclusions."

The entire history of development of modern civilization depends on the character and scale of using biospheric potential; up to a certain level of the development of society, its needs were more or less in conformity with the natural rates of reproduction of natural resources. However, this proportion gradually changed: Social production required increasing volumes of natural resources, whereas the rates of their reproduction remained at the same level.

In the process of development and improvement of exchange between man and nature, local crisis situations could be overcome: Agricultural production intensified, new forms of energy supply and more advanced methods for the utilization of raw materials appeared, and so on. The positive experience of modern civilization reinforced the notions according to which natural resources were inexhaustible. It was only in the seventies that people became aware of and recognized *ecological limits* to the unrestrained scientific-technological development.

Of course, the notion of "exhaustibility" regarding nature is relative in character. Human activity must not disrupt historically established biospheric ties, and this will restrict its possible expansion. In this context, negative predictions throughout history, such as those of Malthus, were voiced considerably ahead of time, but, nevertheless, they introduced corrections into the spontaneous development of civilization. On the other hand, forms of the material world are so diverse in their manifestations, especially if their ethical and aesthetic expressions are taken into account, that notions regarding relative exhaustibility of biospheric resources do not, in any way, hamper the development of civilization but, rather, set other—broader—orientations for progress.

**The myth of two cultures.** In the fifties, Charles Snow noted an intensifying antagonism between natural science and the humanities and the "gap" between the "two hypostases" of the once integral world; this gave rise to an animated discussion among Western intellectuals. In our country, during the "times of Khrushchev," a similar discussion developed between "physicists" and "lyricists."

In different stages of the development of scientific knowledge, an interrelation between integral and differential trends in the structure of science became apparent as an immanent characteristic. Indeed, the originally

"undivided" science in which philosophic, that is to say, humanitarian, knowledge constituted the cementing core, was an integral system of weltanschauung. Furthermore, the science of the New Times, having overcome the contemplative trend of Classical natural philosophy and having rejected Medieval theological dogmas, concentrated its attention on individual aspects and specific manifestations of natural ties and patterns. As a matter of fact, modern science is the child of that distant past. Isn't "differential" science making yet another turn in the spiral, returning to its "integral" past?

This trend was noted by Vernadskiy in the thirties: The development of scientific knowledge is gradually obliterating the differences between individual sciences—a scientist specializes "not in sciences but in problems." Scientific thought actively penetrates all spheres of human activity and existence, permeating its whole social and biological habitat. Vernadskiy believed that a "single universal science" could emerge, a science that would be able to embrace the whole of mankind by "one glance." He realized that resolving such an intellectual problem went far beyond the framework of "national" scientific knowledge. In his diary entries, we read about the visions that he had during the three weeks in which he was ill with spotted fever—a huge white building of an international research center on an ocean shore, the varied technological facilities, and so on.

On the threshold of the 21st century, these ideas of Vernadskiy's that were labeled as "delirious" by the guardians of ideological purity are taking real shape (various international institutes, centers, and so forth), though in the thirties, their evaluation was harsh: "Objectively speaking, the 'theories' and predictions of academician V.I. Vernadskiy reflect and strengthen the positions of our class enemies and the positions of international bourgeoisie that are frantically striving to knock out the main levers of science from the hands of the proletariat, levers that are needed for a socialist transformation of society." (Footnote 8: D. Novogrudskiy. "Geochemistry and Vitalism. On the 'Scientific Outlook' of Academician V.I. Vernadskiy". *POD ZNAMENEM MARKSIZMA*, 1931, Nos. 7-8, p 203.)

Vernadskiy's scientific ideals are operating actively today. The scientist's notion of the universal character of science and of the unity of science are being perceived as the cornerstone of contemporary scientific ideas. There is nothing in the world which would not be included in the notions "nature" and "man." In this context, the thesis of "two cultures" is taken off the agenda; on its basis, the notions of a "third civilization" (F. Sagasti [as transliterated]), "third wave" A. Toffler, "third culture" (I. Prigozhin), and others are being developed. In essence, this is a matter of unity of nature and culture. "It is only on the path toward this unity that mankind may get a chance to preserve itself and its existence on our planet." (Footnote 9: N.F. Ovchinnikov. "A Trend Toward the Unity of Science. Cognition and Nature". Moscow, 1988, p 267.)

### Outlines of a Future Ecological Civilization

In our days, the idea of *ecological survival*, while remaining as acute as ever, is not so pressing as before, and this is a result of renouncing the realization of thermonuclear space strategies. The ecological problem is acquiring a largely evolutionary character, because the destruction of the biological foundations of human existence is becoming spread out in time, so that the acuteness of the contemporary socioecological situation is not felt as strongly as before. This is yet another myth that needs to be debunked. Once this is done, mankind will have to start shaping the foundations of a future *ecological civilization* free from acute contradictions in the system "man-society-nature."

The *global view* of the future demands that new paths of worldwide development be found, paths that will guarantee progress of mankind in conditions of the relatively limited possibilities of the historical biosphere. Listed below are only several of those principles that may underlie the ecological civilization which is taking shape.

**The principle of the contradictory nature of the world that does not, however, preclude its integrity.** The idea of *ecological safety* reinforces the trend toward unity of the countries of the world community in their striving to overcome the biospheric crisis that is becoming further exacerbated. Civilization is permeated with worldwide communication ties; studies of space and oceans on an international scale are expanding; joint search for effective energy sources is under way; and so forth. However, is it possible that contradictions may disappear between states that are resolving dissimilar economic and political tasks, are at dissimilar levels of scientific-technological and sociocultural development, and are situated in specific natural and climatic conditions? Is it possible at all to "live in friendship" on this globe? Can modern civilization count on overcoming most acute social conflicts and contradictions between man and the biosphere without renouncing confrontation and without aspiring to cooperation between states with dissimilar social structures? The answers to these questions must be unambiguous: Either modern civilization will find the strength to achieve the "universal unity of people" (F. Dostoyevskiy) or there will be no room for it in the world historical process, that is to say, it will not be able to withstand the storm of worldwide biospheric shocks. There are no other alternatives.

The world practice of the last decade shows the following: Notwithstanding the remaining contradictory nature of the contemporary world and the radical differences between different states, the problem of *ecological survival* of mankind has become a priority one and the policy of peaceful coexistence between states with dissimilar social structures has become a leading factor in international cooperation. The truly revolutionary sociopolitical transformations in the countries of Eastern Europe, the unification of the two Germanys, and also the prospect of creating a single internal market within



the framework of the European Community are stimulating analogous trends in the system of the world economy. Socioeconomic reforms in socialist countries (the diverse forms of ownership, varied structures of economic management, and others) are creating preconditions for expanding integration trends in all spheres of production-economic and sociocultural activity, including spheres of socioecological development.

**The principle of cyclization of activity.** The historically established character of human activity, in its contemporary forms, is associated with inevitable technologically produced ejections into the biosphere.

New forms and methods of human activity—relatively closed technologies, energy-saving systems, and so on make it possible to reduce these ejections to some extent but do not guarantee absolute cleanness of industries. In the future, only such volumes of contaminants as can be harmlessly assimilated by the biosphere may be permitted. The "microelectronic revolution" is promoting the realization of these trends: Natural resources are being utilized more sparingly, the scale of production activity is being minimized and its negative effect upon human habitat is decreasing. The "symbiosis of the hoe and the computer" A. Toffler is producing an ecologically positive effect. The development of small computerized handicraft industries does not, by any means, rule out the creation of an interrelated system of large enterprises—metallurgical, chemical, textile, and others—also including agricultural subdivisions situated faraway from vital centers of civilization. This interrelated system of large industrial and agricultural enterprises cooperating with small industries is functioning according to the principle of relative close-circuit, more specifically, the waste products of one of them constitute raw materials for another, and so on.

In many developed countries, for example, in Japan, the cyclization level of activity, more specifically, the extent of the utilization of natural resources, is approaching optimal values. Of course, it would be excellent if ecologically clean production and technological systems emerged everywhere. Sooner or later, conservation of resources will become the main source in the world for satisfying evergrowing needs of population with regard to fuel, raw and other materials, and energy. As a result of this, *ecological civilization* will acquire a technological foundation.

**The principle of cosmocentrism.** The emergence, establishment, and development of man and mankind are connected with the biosphere; therefore, biospherocentrism is a natural foundation for the world outlook.

Back in the sixties, a first glance at the earth from space showed how small our "blue planet" was—mankind's space ark—and how thoroughly we must adjust its course in order to avoid finding ourselves in low water. The most recent observations from space have revealed continuing degradation changes in the biosphere, changes that are becoming more and more obvious. This

"space" approach confirms the assumption that the biosphere is, in principle, limited in terms of its territory, resources, ecology, and so on.

Post-Marxists, positively assessing cosmocentric ideas (K. Tsiolkovskiy and others), are quite critical with regard to modern Western theories (F. Dyson, G. O'Neill, and others) accusing them of "astronautical optimism," "bourgeois narrow-mindedness," and so forth. Of course, it will take some time before man will be able to settle on asteroids, comets of the Solar System, or man-made "space islands," but the opening up of space is stimulating the development of new forms and types of activity—the functioning of technology according to the "close-circuit" principle, the acquisition of new materials, the utilization of solar energy, and others. Mankind will hardly need to resort to space for its salvation in the near future. However, when biospheric principles of development fail to operate and when the sun "exhausts" its energy potential some time in the remote future—a possibility that the founders of Marxism also foresaw—then the realization of the principles of cosmocentrism will enable *ecological civilization* to survive under these extreme conditions. From this point of view, the proverb that advises to prepare one's cart in December and remember one's sledge in July is perfectly justified.

In our days, it is essential to increase the degree of control over the processes within the world community. If *ecological civilization* is real, then the form of a corresponding controlling system may be pictured. It may be a universal international forum, similar to the United Nations, which will become a center for coordinated actions of all the states of the world community. The global strategy for the ecological development taking into account the interests of all countries and peoples will be elaborated and implemented precisely within its framework. Such universal international forum is by no means visualized as a supranational organ. I see it as a certain integrating system between the "Global Forum for Environmental Protection and Survival and Development of Humanity" and the United Nations Environment Program, a system expanding its sociocultural orientation.

Within the framework of such a universal international forum, a special fund will be organized; this fund will be available to all the states of the world community and a certain part of capital, saved as a result of the reduction of military expenditure, rationalization of the apparatus of economic management, increase in the effectiveness of production activity, and so on will be transferred to it. The aforementioned capital will be used for resolving specific local or regional socioecological problems. This type of activity can be exemplified by the UN project for saving the Aral Sea. At the beginning, some countries, for example, those representing the "Third World," will enjoy considerable benefits, while others will finance *ecological outlays* of the states on a coordinated basis. Gradually, the former, overcoming the burden of their shortages, due to indebtedness, and their technological



and economic backwardness, will begin to contribute their share to the fund: The Soviet Union and other Eastern European countries, increasing their economic potential and developing their scientific and technological potential, will, correspondingly, increase their *ecological contribution*. Thus, in the future, all countries of the world community will make **fixed** allocations to the ecological fund to guarantee effective combination of ecological and economic development in the dynamics of a future civilization.

Are such projects realistic or do they resemble past utopias? In my opinion, they are perfectly realistic.

First, in the nineties, the whole of mankind has realized the fatal character of the development of the world

socioecological situation, in other words, a corresponding *ecological orientation* of civilization as a whole has taken shape. Second, material preconditions are being created for emerging onto the level of *ecological civilization*, preconditions associated with the stabilization of the military and political situation in the world.

The world has realized that rattling with nuclear armor is in no way a guarantee for the salvation of world civilization, but rather is a path toward its fast slipping into the abyss of irreversible biospheric changes. Perhaps, Clio [the Greek Muse of history] is offering mankind its last chance for survival.

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## REGIONAL AFFAIRS

**Baltic Sea Facing Ecological Collapse**

91WN0230A Berlin JUNG WELT in German  
10 Jan 91 p 7

[Interview with Thomas Brueckmann, spokesman for Rostock's Green League, by Matthias Gerstenhorst and Manfred Gyros; place and date of interview not given: "One Fourth of Sea Floor Biologically Dead"—first paragraph is JUNG WELT introduction]

[Text] Various doomsday messages about the condition of the Baltic Sea have cropped up during the past few weeks. For the first time there is talk about the death of the Baltic Sea. JUNG WELT found out more from Thomas Brueckner, spokesman for Rostock's Green League.

[JUNG WELT] How dead is the Baltic Sea?

[Brueckmann] About 100,000 of the Baltic's 386,000 square kilometers of ocean floor are biologically dead. This means that a good quarter of the ocean floor is covered with organic waste.

[JUNG WELT] What does that mean in concrete terms?

[Brueckmann] Because so much water flows into the Baltic, its level of phosphates and nitrates is rising. These chemicals encourage the growth of plants. For the Baltic Sea it means an enormous increase in the spread of algae. After a certain time, the algae die and sink to the bottom. Normally they would decompose with the help of oxygen. However, the increased occurrence of algae uses up all the oxygen and then they turn into hydrogen sulfide which acts as a dangerous poison.

[JUNG WELT] Does that mean that the Baltic Sea is suffocating?

[Brueckmann] Yes. What is alarming about this is that this process no longer just takes place in deeper regions. Hydrogen sulfide has been found at a depth of 20 meters in the bay of Luebeck and at 12 meters near Kuehlungsborn.

[JUNG WELT] The Baltic Sea is described as an unstable ecosystem. Does this mean that the Baltic is more vulnerable to pollution than other seas?

[Brueckmann] It is the specific nature of the Baltic that it is something of a cesspool without an outlet. In contrast to the North Sea, it has almost no exchange with the oxygen-rich salt water of the Atlantic—12,000 years ago, the Baltic was still an inland sea! And that is the problem: We have a continuous inflow of oxygen-poor and nutrient-rich sweet river water without an exchange with oxygen-rich water. As a result, the oxygen level decreases rapidly and the concentration of hydrogen sulfide increases correspondingly.

[JUNG WELT] What are the effects of this process on the animal life of the Baltic Sea?

[Brueckmann] When it comes to Central and Northern Europe, the Baltic Sea has a unique wildlife. Well-known are the many species of sea birds that breed in the coastal regions. Of course, there are effects. I foresee the greatest danger for fish whose spawning grounds are being destroyed, and for seals. I am sure everybody still remembers when the seals died. Various toxins caused bone fractures, tooth loss, and the malfunctioning of organs among seals. Because they are at the end of the food chain, they get to swallow every kind of toxic combination.

[JUNG WELT] Who are the major polluters of the Baltic Sea?

[Brueckmann] Clearly the Poles and the Soviets. Because they don't have waste-water purification plants, pesticides and heavy metals flow uninhibited into the sea together with the already mentioned nutrients. But those Westerners who border [on the Baltic] have no reason to be complacent. On the basis of more highly developed technologies, here, too, the influx [of pollutants] could be reduced enormously.

[JUNG WELT] What does the future of the Baltic Sea look like? What are the chances for its rescue?

[Brueckmann] One simply must reduce the level of pollutants. It is necessary to build several waste-water purification plants and all fertilizing plans must be reevaluated as to how their nutrients and toxins burden our rivers, and thereby the sea. Also needed are considerable funds from the European Community for the environmental protection of the eastern regions.

[JUNG WELT] Can you put a price tag on these necessary expenses, and how can the money be made available?

[Brueckmann] I can guarantee you that we are talking in terms of billions. But this money needs to be put to proper use. I think it is wrong to simply remove the effects of pollution—as by aerating the seabed. We need to concentrate on eliminating the primary causes of pollution, otherwise we will keep the Baltic Sea artificially healthy and cause incalculable damage. Since the political situation has changed, the money for these necessary measures could come from cuts in defense spending.

### CSFR, German Environmentalists Discuss Future Cooperation

AU2102144991 Prague CTK in English 2120 GMT  
19 Feb 91

[Text] Prague Feb 19 (CTK)—Czechoslovak President Vaclav Havel and a delegation of the German state of Saxony led by Ministerpresident Kurt Hans Biedenkopf discussed cooperation in ecology and the energy industry here today.

The delegation, who ended their two-day visit to Czechoslovakia later in the day, discussed ways of future cooperation after the disintegration of the former GDR market had left Czechoslovakia with a payments deficit in relation to the former GDR last year. This was caused by a dramatic decline of more than 30 percent in Czechoslovakia's exports while imports went up.

Both sides see prospects especially in cooperation between enterprises along the common frontier. The number of work permits for Czechoslovak citizens in Saxony will be favorably influenced by mutual interest in participation of Czechoslovak firms in the reconstruction and construction of plants in Saxony, and in building transport links, including a Berlin-Dresden-Prague-Vienna motorway, modernization of railways and water routes. These projects were discussed by Biedenkopf and Czechoslovak Transport Minister Jiri Nezval yesterday.

One of the points on the agenda of today's talks between Czech Parliament Chairwoman Dagmar Buresova and Kurt Biedenkopf were restitutions of nationalized property. This issue is currently subject of dramatic discussions in Czechoslovak parliament. Biedenkopf said that property nationalized in his country after the proclamation of the socialist-oriented German Democratic Republic in 1949 is being returned in kind. Financial compensation is paid for built-up estates or for plants to their former owners if they do not want to personally manage them.

Biedenkopf, chairman of the Economic Committee of the Christian Democratic Union (CDU), also met today with Deputy Chairman of the Czechoslovak Federal Assembly (parliament) Konstantin Viktorin. They agreed international cooperation is important for new legislation in the former communist states to be shaped on the basis of European standards in order to facilitate future cooperation and integration.

Biedenkopf and Chairman of the Czechoslovak People's Party Josef Lux discussed Czechoslovakia's internal political situation, transformation of the industry and agriculture in Czechoslovakia. The Saxony leader offered exchange of experts and students in various spheres.

At a meeting with Chairman of the Christian Democratic Party Vaclav Benda, Biedenkopf said he expected parties in Czechoslovakia, including the Christian democratic ones, to be more distinctly shaped.

Summing up his visit to Czechoslovakia, Biedenkopf told journalists several joint commissions at the level of the Czech and Federal Governments have been set up, e.g., in the fields of transport, foreign trade, and tourism. The commission of Czech and Saxony experts on the environment will meet already on March 12-14.

The projects discussed during the visit included the construction of a joint water treatment plant and

rerouting of a Dresden-Prague motorway, the original project for which was agreed upon with the former GDR.

The Saxony Ministerpresident said his first foreign trip took him to Czechoslovakia because he felt the necessity to follow up traditional mutually beneficial relations.

#### **German-Polish Environmental Council To Be Set Up**

*LD0403130491 Hamburg DPA in German 1204 GMT 4 Mar 91*

[Text] Bonn (DPA)—The establishment of a joint environmental council on the lines of the French-German one was decided in Bonn today by Environment Minister Klaus Toepfer and his Polish counterpart Maciej Nowicki. The environmental council is to deal with issues relating to neighborly cooperation in this area and to plan specific projects.

One of the first joint measures, as the two ministers told the press, will be German participation in the building of an environmentally friendly heating power station in Gliwice and of a modern sewage farm in Swinoujscie on the Baltic. In addition a joint national park will be created on the Lower Oder [River].

The controversial export of German industrial waste to Poland is to be dealt with in a joint working group, which will meet before the end of March. Toepfer confirmed that there are at present 7000 tonnes of zinc dust stored in Szczecin, which may have to be brought back. The present legal situation in Poland does not allow it to be processed, Toepfer said. Moreover there are 82 tonnes of toxic solvents of German origin stored in Poland.

#### **Poland, Norway Sign Environmental Cooperation Agreement**

*LD2102234991 Warsaw PAP in English 2047 GMT 21 Feb 91*

[Text] Warsaw, Feb 21—Poland and Norway signed here today an agreement on cooperation in the protection of the natural environment in the years 1991-1992.

Poland is especially interested in receiving access to modern, so called "clean" technologies, said Polish Minister for Environment Protection Maciej Nowicki.

Speaking about future cooperation, Norwegian Minister for Environment Protection Thorbjørn Berntsen told PAP that prominence should be given to cooperation in power industry.

#### **Sunken Tanker Contaminates Adriatic**

*AU2002102391 Zagreb VJESNIK in Serbo-Croatian 14 Feb 91 p 14*

[Inoslav Besker report: "Alarm: Poison Leaking Into Adriatic Sea"]

[Excerpt] Rome—The first signs of poison have been noticed in the Adriatic Sea some 12 miles from the

Apulian harbor of Molfette, where the tanker "Alessandro Primo" sank. The vessel, which sank on 1 February, was carrying two toxic substances (3,000 tonnes of cikloretan [spelling of substance as published] and 550 tonnes of acrylonitrile), and traces of acrylonitrile were found in the water on Tuesday. Its concentration at the moment is well below the critical level. The experts of the Central Institute for Applied Water Research found out that the concentration of acrylonitrile in the sample of seawater was 2.7 millionths. The critical level of toxicity is 14 millionths. [passage omitted]

## FRANCE

### Environmental Research Funding Levels Low

91WN0246B Paris LE MONDE in French 24 Jan 91  
p 16

[Article by Roger Cans: "Environmental Research: Neglected Area"]

[Text] The Council of Ministers on Wednesday 23 January accepted a joint report from Hubert Curien, minister for research and technology, and Brice Lalonde, deputy minister for environmental affairs. The government thus laid the groundwork for a new policy under which environmental research, which presently gets only 3 percent of research appropriations, will be receiving 5 percent in five more years.

The Ministry of Environmental Affairs has been waiting anxiously to see how much the government would allocate to research. According to Mr. Brice Lalonde, who has always shown great personal enthusiasm for new technologies, scientific research is the key to progress. Though ecology may be more than anything else a state of mind, it cannot fully realize its potential unless it is based on the most recent developments in science and technology. Whether the issue is pollution in the Rhine, acid rain, or the ozone layer, scientific research has shown itself to be indispensable for effective action over the longer term.

But scientific institutions have a hard time with environmental research. "Research is organized into disciplines," observes Mr. Jean-Claude Oppeneau, director of the Agency for Environmental Research, Study and Information Processing (SRETIE). "This traditional fragmentation impedes all multidisciplinary research or research that crosses disciplinary boundaries, and such research is indispensable in environmental studies. Given the complexity of the interactions within an ecosystem, we cannot limit ourselves to a single discipline."

From 1972 to 1983, the only tool the Ministry of Environmental Affairs had for launching or coordinating research was the Study and Research Mission (MER), a bare-bones unit that from 1978 on was overseen by a

high official, Mr. Serge Antoine. In 1984, MER was turned into an agency known as SRETIE; initially it was overseen by another high official, Mr. Lucien Chabason, author of the Lalonde-promoted "green plan."

SRETIE today has some sixty employees, including 25 engineers, researchers, and miscellaneous personnel who (in a broad sense) could be described as "scientific." For 1991, SRETIE has a budget of Fr60 million, with which it will finance research contracts to be carried out with all sorts of partners, both public and private. SRETIE finances very tightly focused studies—on the proliferation of an insect species or the migrations of a particular kind of bird, for example—as well as research on broader issues such as climatic change.

### Specific Programs

When it comes to "applied" research that could lead to industrial applications, the ministry encourages joint ventures. It helped develop the Meractive process, clean-up equipment for beaches, and porous highway barriers that would simultaneously reduce noise levels and improve road safety. In 1989 an agreement was signed with the New Jersey Institute of Technology in Newark (United States) providing for exchanges with researchers working for major companies like Rhone-Poulenc, ELF, General Water, and Lyonnaise-Dumez. The ministry pours Fr200,000 to Fr300,000 a year into a waste-processing research program.

Within the great French research institutes, the environment is starting to become the subject of specific research programs. In 1979 an agreement was reached between CNRS [National Scientific Research Center] and the Ministry of Environmental Affairs to establish the Interdisciplinary Environmental Research Program (PIREN). The latter, having run into various operational problems, has changed its name this year and is now simply the CNRS environmental program; it hopes to "become increasingly interdisciplinary, interinstitutional, and international." PIRSEM, the "energy and raw materials" program, will also take up environmental questions. As indicated in the 15 January issue of CNRS INFO, the idea of "integration, that is a multiperspective view of complex phenomena, including biological phenomena and ecosystems," is coming back into vogue. And CNRS intends to play a key role in fields such as the environment and climatology, where scientific research has become completely internationalized.

The National Institute of Agronomic Research (INRA) plans to add an environmental directorate before the end of the year. That will put it in a better position to coordinate the numerous studies INRA has already undertaken in this field.

Finally, the Ministry of Environmental Affairs is going to sponsor GIP's (Public Interest Groups) in which public-sector research institutes join forces with private companies. Already on the horizon are a water GIP made up of BRGM [Bureau of Geological and Mining Exploration], CEMAGREF [expansion unknown] and



IFREMER [French Institution for Research on Exploitation of the Ocean], as well as a forest ecosystem GIP harnessing the talents of INRA, CEMAGREF, and several university laboratories. The "clean and economical vehicles" program, launched in 1989 by the Ministries of Industry and Research, is going to get dramatically stepped-up funding (Fr1.3 billion over five years). A new program will be launched to develop the "water purification station of the year 2000" to process waste water reliably in conformity with the new standards.

As for the future "large environmental agency" (it is not yet certain whether it will be called ADEN, AFEME, or AEME), it will coordinate the technological research hitherto managed separately in the sectors of energy conservation, waste handling and air quality.

### Poll Shows Self-Criticism for Waste

91WN0249A Paris *LIBERATION* in French 7 Feb 91  
p 37

[Article by Helene Crie]

[Text] "In a few years, when people come to dump their garbage in front of the prefectures, the government will have to do something, no matter how expensive the dollar is and regardless of the international situation." A week before hostilities began in the Gulf, Laurent Fabius justified the holding of a conference on "Waste: Enduring or Controlling It," at the Lassay Hotel on 17 January. Despite the astonishingly high number of registrations sent in by elected officials, manufacturers, and scientists, the president of the National Assembly was forced to postpone his major ecology seminar until today (the second of its nature, following the conference on the ozone layer in the spring of 1989).

The fact that 66 percent of all French people consider the oil spill in the Gulf as the most important event of last week only furthers the organizers' stubborn efforts: Environmental issues have become real political stakes.

The seminar will begin this morning with the circulation of a SOFRES poll conducted from 7 to 9 January for the National Agency for the Recovery and Elimination of Waste (ANRED): "The Attitude of the French People Toward Industrial and Household Waste." A major surprise was in store: Believing that waste is poorly handled in France, consumers believe they are primarily responsible for the situation (31 percent), ahead of the government (24 percent), business (20 percent), and municipalities (15 percent).

ANRED Director Christian Mettelet does not conceal his surprise: "For once, manufacturers are not the first ones blamed." What is more, 51 percent of all those questioned think they can "act effectively to improve the management of household waste." Among the measures they think are within their reach, 71 percent name sorting garbage into different containers, 38 percent boycotting products that damage the environment, and 26 percent refusing to buy liquids in containers that

cannot be recycled. Only 17 percent would pay more for products whose waste could be recycled more easily.

This is where the attitude of consumers becomes somewhat incoherent, however. Dump sites for household or industrial waste are rejected by most of those polled, but 64 percent would accept having a recycling center set up in their neighborhood. Given the current state of the waste market, selective collection and recycling are turning out to be considerably more expensive than merely dumping or even incineration.

How are the ecological demands of consumers to be financed when they are not willing to bear the cost? The poll also fails to ask whether an increase in local taxes or the institution of a parafiscal tax (as proposed by the Ministry of Environment) would be accepted.

Businesses specializing in the treatment and elimination of waste have been mulling over these ideas for a year, reviewing their commercial strategies and making considerable efforts to develop new technologies (see *LIBERATION*, 21 Nov). "The products we propose no longer necessarily correspond to what the public is demanding," observes Philippe Brongniard, president of the National Federation of Waste Activities. Like all professionals once used to small committee discussions with elected officials, Brongniard cannot get over "how the subject has changed in scope. The fact that the National Assembly would devote an entire day to waste in the current situation is remarkable," he says.

In a major coup for an official manifestation on the topic, all "ordinary" waste, whether toxic or nuclear, will be treated alike. While from a strictly technical point of view radioactive waste has nothing in common with the rest—handling is completely different—"In the public's mind, it is the same thing," Mettelet admits. This is also true of elected officials, many of whom will attend the seminar in the hope of picking up a few tips in order to respond to the needs of their constituents.

### Measures Approved for Fighting Forest Fires

91WN0246A Paris *LE MONDE* in French 22 Jan 91  
p 16

[Article by Guy Porte, regional correspondent: "Government Plans To Improve Aerial Forest Fire Control Equipment"]

[Text] Mr. Philippe Marchand, deputy minister for territorial communities and civil security, said on Thursday 17 January at Marseille the government was going to increase appropriations for fighting forest fires. The Interior Ministry's budget will grow from 450 million francs [Fr] in 1990 to Fr470 million in 1991. Most of the new money will be used to continue fitting out the fleet of "Trackers"—designed mainly for "armed patrol" missions—with new engines, and to lease three Hercules C-130 heavy transports (capacity 13,000 liters) for the upcoming forest fire season, instead of just one as was

done last summer. Completion of the program will mean a 25 percent increase in drop capacity.

The minister, in Marseille to chair a meeting of the advisory committee of the Mediterranean Forest Conservatory, also said the order for 12 Canadair CL 215 T turbo-props—eyed as a replacement for the current fleet of amphibious aircraft—was now “back on track.” “Negotiations with Canada’s Bombardier company have just begun in Paris,” he said.

Each of the turbo-props is expected to carry a price tag in excess of Fr100 million—more than the cost of a high-speed train [TGV]—and the entire contract, which provides for industrial offsets, should be worth close to Fr1.4 billion. The government will bear all costs. The CL 215, though still in the certification process, is already being flown experimentally in Canada by a French pilot from the Flight Test Center.

The aircraft will begin arriving in series of three in 1994, with the last delivery scheduled for 1998. Mr. Marchand also mentioned a report prepared by an administration inspector general, Mr. Lemoine, concerning urbanization in forest areas. The report, which has not been made public, makes 23 recommendations, one of which would put controls on the construction materials employed.

### Peugeot Introduces Electric Car

91WS0075X Paris LE MONDE in French 5 Dec 90  
pp 1, 24

[Article by Veronique Maurus: “A Real Start for the Electric Car: Peugeot Introduces an Assembly-Line Van Costing 30 Percent More Than the Gasoline-Engine Model”]

[Text] It is a small white van with blue markings that looks just like the ones all over the streets of Paris, except for two details: It works on electricity and sells for a catalog price of 130,000 French francs. This is the big event of the 10th international electric vehicle exposition being held in Hong Kong.

For the first time ever, a major automobile manufacturer—Peugeot, actually—is marketing an electric vehicle that is mass-produced on the same assembly lines as its classic counterpart and only 30 percent more expensive. An immediate success: EDF [a French Power Company] has already ordered 250, Hong Kong’s China Light and Power Company about 50, and Austria 25. Negotiations are under way with some 15 French cities (Dunkirk, etc.) and the principality of Monaco, a dozen European countries, the PTT [posts, telegraph and telephone], Eurotunnel, major corporations, etc.

No doubt about it: After 20 years of faltering and disappointments, the electric vehicle is finally here. No more weird prototypes and random experimentation. After the utilitarian model, which is sold at a higher price to a special clientele, Peugeot has announced that in 1994 it will introduce an electric 205 for the public that

will sell for the same price as its gasoline-powered counterpart. Then, by the turn of the century, a separate model. The Americans, with General Motors in the lead, will begin standard production model marketing within two years, and the Japanese in three...possibly with some surprises.

Executives from the China Light and Power Company explain, “At the age of 92, our chairman still attends board meetings. In each meeting, he asks, ‘When will we introduce an electric vehicle?’ Until now, we were unable to find an automaker to sell them. This time, there is one; this is for real. We’d like to make half of our fleet electric in the very near future.”

Why this sudden craze after so many years of setbacks? The answer is twofold: environment and oil crisis. Ecological concerns, which long remained a secondary consideration, have taken on such political impact that they are now among the priorities of all decision-makers. Pollution-free, totally noiseless, and above all not too fast—100 km/hr at the most—and therefore safe, the electric vehicle is the ideal choice for urban transport. The State of California recently kicked off the trend by requiring automakers to sell at least 3 percent electric vehicles by 1998 (and at least 10 percent by 2003). Regulations should follow suit everywhere, ultimately making city-polluting thermal vehicles purely and simply illegal.

The Gulf crisis, while accenting the vulnerability of oil-consuming countries in the face of the whims of Middle Eastern oil, also helped speed things along. In fact, although replacement methods do exist for the production of primary energy (nuclear, coal, gas, hydraulics, etc.), transportation is still just as dependent as it was on black gold. Here, too, the electric vehicle appears in the end to be one of the only viable solutions.

So there is already a potential market. All the more so because the idea of a limited-use town-car, usually a second car, is rapidly developing. Peugeot has calculated that by 1995 the European market for small-engine second cars covering no more than 70 miles a day will reach 400,000 units (instead of today’s 300,000). Half that total could be electric.

All that remains is to capture that market, which will not be easy because electric vehicles have two major handicaps: Limited range and a high price-tag. On the technical level, considerable progress has been made in the past 20 years. The highest-performing vehicles now have a range of 100 kilometers, batteries are sealed, recharging time is no more than 10 hours, and the maximum speed can be up to 100 km/hr.

The above are the typical requirements for a car that can travel around town for an average of four hours a day and be recharged at night through a simple electrical outlet. But the technical revolution expected in the area of batteries, where weight and size are major handicaps, is still not here. As for price, until now it has been greatly

excessive. Since there was no mass production, prototypes, although numerous, were no more than a conversation piece.

These handicaps should progressively be eliminated. By fitting the electric motor to assembly-line models, Peugeot has proven that the cost gap can be reduced to an acceptable level for highly-motivated organizations such as cities, power companies, administrative services, etc., especially because the cost of running these electric vehicles is much lower. At La Rochelle, where for several years now the city has been using electric vehicles produced locally by Volta using components purchased from major automakers, the utilities manager feels that the excess initial investment is amortized within 3 years due to the practically inexistent maintenance costs and especially the low cost of the fuel. At the night-time power rate, an electric vehicle costs only 6 to 10 francs per 100 kilometers of travel, in contrast to an average of 50 francs for a gasoline-powered vehicle.

#### Peugeot's Voluntary Policy

Peugeot believes that three or four years down the road the price gap will disappear. The increase in mass-produced units, up to at least 50,000 vehicles per year, should cut the cost of the engine, battery, and electronic control systems in half. Within 10 years, the production of a separate model could even bring the price down below that of thermal vehicles, thereby reversing the problem.

"We have adopted a voluntary policy to break the vicious circle," explains Jean-Yves Helmer, manager of PSA's automobile division, adding "Until now, electric cars didn't sell because of the high price, and the prices were high because they didn't sell."

#### Voluntary But Not Deluded

Even at Peugeot, a pioneer in the field, no one ever thought electric vehicles would replace all gasoline-powered vehicles overnight. Since practically no headway has been made in the field of highway vehicles—although numerous versions exist...on paper—the electric car will be limited for a long time to specific, essentially urban, uses. But experts think that by the beginning of the next century 10 to 15 percent of the world market could be driving electric. Quite tempting for EDF, which is already designing collective charging systems in garages, beside parking meters, and even...in gas stations!

#### 'Unique' Method of Aerosol Destruction

91WN0249B Paris *LIBERATION* in French 18 Jan 91  
p 40

[Article by Roselyne Devichi]

[Text] The little town of Triel-sur-Seine (Yvelines) can take pride in two points of interest but in different categories: The first is a historical monument, Saint

Martin Church, dating from the 12th century and rebuilt in the 15th, which presents the intriguing feature of straddling Hautil Road. The other is a small company, the SRD, which engages in an activity unique in all of Europe. The Waste Recycling Service, which disposes of aerosols by sorting and treating all elements rendered reusable, is one of 50,000 "French establishments classified for protection of the environment" and requiring authorization.

Everything turns up there: perfumes, shaving cream, insecticides, janitorial products, all new. Among the "bombs" being discarded one distinguishes those with a manufacturing defect and that will not be marketed and those coming off the market because their expiration date is imminent (drugs) or because an advertising campaign makes their packaging old-fashioned or unsuitable for sale. For two years now, manufacturers or merchants have been able to send them directly to the SRD.

Many aerosols contain harmful products which their packaging no longer protects because it ends up rusting, but substantial quantities of the propellant are nevertheless left. Contrary to what people believe, it is not only the CFC's, the notorious chlorofluorocarbons accused of destroying the ozone layer, that are dangerous in the aerosols.

This is where the SRD's technique comes into play: Common methods of disposal, dumping or crushing, present the disadvantage of allowing the contents or propellant to escape into the atmosphere. Incineration, which is a little more sophisticated, rules out any recovery and presents the drawback of being twice as expensive and wasting recyclable products.

In 1988, two unemployed professionals previously active while in their 50's, Francois Nugues and Pierre Robic, one with a background in industrial research and the other in petrochemistry, did a market study cofinanced by ANRED (National Agency for the Recovery and Elimination of Waste). Observing "the absence of any structure capable of handling integral recovery of by-products obtained from the destruction of aerosols" and "the existence of a market linked to phytosanitary aerosols and freons," they decided to invest in that niche and set up a company. The problem: How to design a machine to take apart the different sizes of aerosols without losing a gram of the precious gas? Nugues and Robic, employing women and children, first punctured hundreds of "bombs." The first automatic machine, coupled to a cold-storage compressor, was built at the beginning of 1989. It still had to comply with pertinent agencies. Requirements imposed on industrial sites come from prefects and regulations differ depending on the department. Furthermore, the oldest plants have not been compelled to make their standards as strict as have newer plants.

The SRD finds itself in a paradoxical situation. It is in perfect compliance with norms protecting the environment. It works with a whole network of gas, aluminum, and other recyclers and endures unfair competition: Its rivals, who are more lenient, pollute more, and work more cheaply.

## GERMANY

### **Aerospace Institute To Develop Environmental Image Database**

91MI0140A Bonn BMFT JOURNAL in German  
Nov 90 p 10

[Text] The concern over what may be massive global climatic changes is growing—and along with it the need for concrete action. However, targeted measures require information and knowledge about the complex interrelations involved in climatic phenomena. To this end the German Aerospace Research Institute (DLR) is preparing an ambitious new environmental remote sensing project: the establishment of a satellite image environmental data base.

This facility will process the data supplied by remote sensing satellites and make it available to a wide range of users. One of these satellites, ERS-1 (European Remote Sensing Satellite), is expected to supply a torrent of data: It is scheduled to go into orbit in 1991. It is considered one of the most important "informers" of the future data base, which is attached to the DLR's German Remote Sensing Data Center at Oberpfaffenhofen.

In addition to ocean observation and tropical rain forest surveying, a key project for ERS-1 will be to measure the Antarctic. A ground station there will receive the satellite and forward it to the DLR, where the information will be processed, filed, and made available to users. ERS-1 will operate predominantly on a radar basis: It will identify icebergs and even individual floes, and analyze the glacier ice in the Antarctic as to its age, nature, and dynamics. Thus systematic, empirically collected information will be available for the first time to help establish whether, and to what degree, the greenhouse effect is warming the oceans and melting the polar ice. The existing prognosis models can therefore be based on more solid data. From an altitude of 800 kilometers the ERS-1 can also "look" into the ocean depths and survey the currents. A radar map of Germany will also be drawn up.

As visible, infrared, and microwave range satellite images are analyzed in conjunction with a quantity of complementary digital data, uses range from the detection of local damage to the environment (marine oil pollution) or through regional phenomena (depletion of woodland) to global monitoring. This opens new prospects for ecological surveying that conventional methods cannot offer.

## IRELAND

### **Government Orders Ozone Damage Study**

91WN0251A Dublin IRISH INDEPENDENT  
in English 11 Jan 91 p 13

[Text] A series of expert studies have been commissioned by the Government to help fight the effects of damage to the ozone layer.

The studies have been commissioned to determine the specific damage that could occur in Ireland arising from a possible rise in temperatures throughout the world, with consequent flooding resulting from melting of the polar ice caps.

The reports will lead to blueprints which will be used as part of a national plan to limit the damaging gas emissions.

The studies will examine the impact on fisheries, forestry, agriculture, changes in sea levels, and possible damage to wildlife.

The Department of the Environment has started a major initiative for the purpose of reducing the use and manufacture of the ozone-damaging gases, CFCs and halons.

Foam manufacturers have been identified as the largest users of CFCs in Ireland, accounting for 42 percent of national use of the gases.

Medical and pharmaceutical groups and the solvent sectors each account for 21 percent of CFC use, while refrigeration accounts for the remaining 16 percent.

All suppliers of CFCs and halon gases in Ireland have been requested by the Department to develop programmes to reduce their reliance on such gases. Their success is doing so will be monitored by the Department of the Environment.

## ITALY

### **Company Develops Robot for Aluminum Foundries**

91MI0149X Milan ITALIA OGGI in Italian 19 Dec 90  
p 44

[Text] The main objectives of Apollo, a multifunctional robot that is designed to change anodes in electrolytic cells, are to remedy the environmental hazards of aluminum factories and increase adaptability to the manufacturing process.

The prototype, which was presented yesterday at Techmo Car's headquarters in Limena, permits operating times to be reduced since it can be adapted to various types of systems. In fact, its lightness permits it to be assembled and integrated on any type of ore bridge, even those with a limited range.

The project was recognized to be highly innovative by the Ministry of Industry. One year ago, Techmo Car was



granted 1.1 billion lire in funding at favorable interest rates under Law 46/1982, corresponding to 55 percent of the project's costs. The government's increased awareness of the environment was certainly a decisive factor in singling out this initiative, but not the only one. Under a technological profile, Techmo Car's project is a break with the past. The self-propelled machinery and equipment suspended on ore bridges, which were used to change the anode prior to Apollo, were rigid structures that could only be adapted to the manufacturing processes they were designed for. Furthermore, the procedure was lengthy because once the substance was removed, it first had to be transferred to the appropriate storage area, where the new anode was retrieved. The electrolytic cell, which emitted fumes, often remained open for more than 10 minutes. On the contrary, Apollo contains the new anode even before the cell is cleaned and is opportunely driven by a programmed system that completes the entire operation in just one minute.

The new system can also be easily transported from one place to another within the factory. In case of a breakdown, it does not halt production since it can be immediately removed. There is no problem for the operator either, who can maneuver the robot from the inside of a booth that is insulated from the external environment with special soundproofing systems and filters.

This prototype is Techmo Car's latest development. The company was established in 1960 by its current president Franco Zannini, to design and develop manufacturing equipment for the primary aluminum industry. The Techmo Engineering company has also been established primarily to meet with international competition and will collaborate with other international companies on the modernization of systems. Apart from Apollo, Techmo Car is currently working on the DAISY (Dry Absorption Integrated System) project. This system is designed to eliminate highly polluting emissions resulting from the production of aluminum, starting with fluoron. Already patented in the principal aluminum producing countries, DAISY will probably be developed before the end of 1991.

## UNITED KINGDOM

### Acid Rain Legislation To Be Challenged

91WN0250A London *THE DAILY TELEGRAPH*  
in English 21 Jan 91 p 8

[Article by Charles Clover]

[Text] The Government is bracing itself to resist a series of legal challenges to the high levels of acid rain that Britain's coal-fired power stations are allowed to emit.

Mounted by environmental groups under a new law, the legal actions, if successful, could severely erode the revenue expected from the privatisation of the electricity generating companies.

Under the untested Environmental Protection Act 1990, generating companies and industry are allowed to appeal against controls placed upon them under the Act's new system of integrated pollution control by HM Inspectorate of Pollution.

But most worryingly for the two generating companies, National Power and Power Gen, which are shortly to be privatised, environmental groups are allowed for the first time to apply for judicial review of pollution inspectorate advice on new acid rain reduction equipment or on new authorisations to existing coal-fired power stations.

Britain still produces more acid rain than any other EC country.

Dr. Frank Feates, director of HMIP, has told *THE DAILY TELEGRAPH* in an exclusive interview that the Inspectorate is obliged to examine impartially all appeals and public objections lodged under the new Act and, if necessary, to act on them.

Such challenges could target, for example, the industry's 1-2 billion acid rain reduction programme which will use a technique in which millions of tons of limestone are used to neutralise the acid.

Environmentalists believe that a different process, which creates sulphuric acid and minimises the use of limestone from quarries, should be used.

Power stations are the first to face curbs under the new system of integrated pollution control, which HMIP must have in place by April.

HMIP's first detailed advice on Britain's 100 large power stations and industrial plants capable of emitting acid rain is expected to be published soon.

At least three environmental groups are understood to be preparing legal challenges to its technical advice or power station authorisations under the new Act.

Miss Fiona Weir, Friends of the Earth air pollution campaigner, told *THE DAILY TELEGRAPH*: "We are trying to build up a case because early precedents will be crucial."

Three kinds of legal challenge are possible:

- To contest HMIP's guidance notes to polluters. These, just published, say the best available technology, not entailing excessive cost, must be fitted to new industry but not to existing coal-fired stations.

This principle could be the target of a judicial review examining why the best available technology is not being applied to all coal-fired power stations.

Authorisations for individual, highly-polluting power stations could be opposed on the grounds that better, available technology could be used.

Britain's policy of allowing existing coal-fired stations to get away without fitting acid rain reduction equipment could be challenged under European law.

This option is already being attempted by Friends of the Earth, which has complained to the European Commission that Britain is not doing enough under a 1984 directive on air pollution.

Commission sources said last week that Friends of the Earth appeared to have a good case and that its lawyers would be announcing next month whether they would be taking Britain to the European court over its sulphur emissions.

Dr. Feates said: "If some radically different solution to a pollution problem comes up, we can require industry to apply it. Indeed the inspectorate has a duty to ensure that best available technology is employed."

But he added that HMIP, which had long functioned below its full complement of trained inspectors, was interviewing 600 candidates for training, and would not be able to cope with its present complement of 248 if there were appeals or judicial reviews under the new legislation.

Mr. Heseltine, Environment Secretary, is to announce the number of additional staff allocated to HMIP this week.

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